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IDENTIFIERS	*Keypunch Operators

ABSTRACT

This competency-based data processing curriculum guide consists of a total of 65 curriculum worksheets dealing with data entry, computer operations, and computer programing. Provided in each worksheet are the following materials: a duty title, a task description, a pretest, references and resources, student learning activities, teacher activities, necessary tools/equipment, conditions necessary for completing each task, evaluation criteria, and a posttest. Representative data entry tasks covered include manipulating various knobs, switches, keys, and levers; analyzing job descriptions; assessing device malfunctions; analyzing data fields and written information in technical manuals; writing job information; and placing media in storage areas. Various computer operations tasks are addressed, including arranging a group of jobs, reading and analyzing operating instructions, manipulating switches and keys, analyzing console-produced messages and written descriptions in technical manuals, logging in information, comparing computer-produced output to job description samples, and interpreting device and system performance. Among those computer programing tasks examined in the guide are the following: analyzing program requests, program specifications, and written descriptions; writing language statements; reviewing, keying, and writing source statements; analyzing output data and error notation; writing operating instructions; and designing data. (MN)

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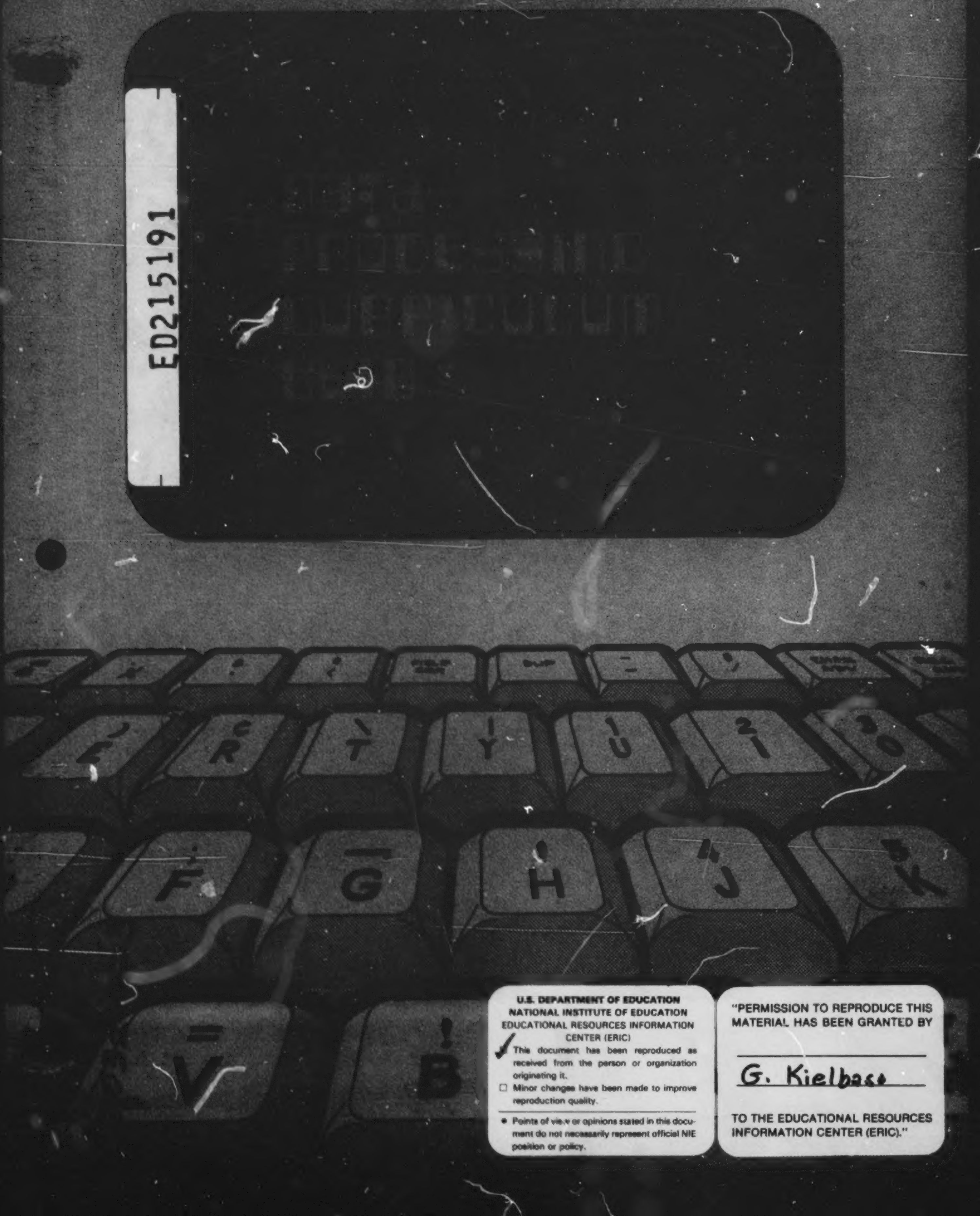

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INTRODUCTION

This curriculum was developed through a grant awarded to the Agriculture and Natural Resources Education Institute (ANREI), College of Agriculture and Natural Resources, Michigan State University, by the Vocational-Technical Education Service of the Michigan Department of Education (V-TES/MDE). While development of the curriculum was the responsibility of ANREI, every attempt was made to involve people representing education and industry. The final curriculum is representative of the tasks data processing workers perform on the job.

The credit for this curriculum belongs to:

(1) The V-TES/MDE consultant responsible for the respective program area;

(2) A task force leader hired to do the major writing;

(3) A task force of individuals from business, industry, and education who reviewed task statements, achievement indicators, and criteria statements. Individuals from education also wrote additional curriculum materials and pilot-tested a sampling of the completed curriculum.

(4) The project coordinator from ANREI.

The names of these people are identified after this introduction.

The following describes the role of each of those credited above in developing the curriculum.

(1) The V-TES/MDE curriculum consultant provided overall guidance for the project. This responsibility included nominating the task force leader, the task force members, and working with ANREI staff to determine the direction, format, and content for the final curriculum.

(2) The task force leader was responsible for all the writing activities. This person drew upon their professional expertise and other resources to develop the curriculum.

(3) The task force members assisted in writing, reviewing, and pilot-testing of the curriculum and suggested appropriate changes. The final curriculum is the result of the close cooperation between the task force members, State staff consultant, and project coordinator. The curriculum represents as accurately as possible the activities of data processing workers on their jobs in the world of work.

(4) The project coordinator in ANREI was responsible for developing the format of the curriculum, working with the task force leaders to ensure the quality of the curriculum as well as that the final curriculum was produced on schedule. The work of the project coordinator was made considerably easier because of the close collaboration of the V-TES/MDE curriculum consultants. This whole effort was a partnership and could not have been completed without this arrangement.

Finally, the secretaries and other support staff who typed and proofread the final product are always neglected. Without their assistance this effort would never have been completed.

It is intended by all those involved in the development of this curriculum that it always be used to provide relevant training for entry to the world of work. It is hoped that this curriculum is used to that end.

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DATA ENTRY TASK

Task No.	Task
DE-1	Manipulate switches, keys and levers using a knowledge of the device operations to activate a data entry device.
DE-2	Manipulate switches, keys and levers using a knowledge of the device operations to deactivate a data entry device.
DE-3	Analyze device malfunctions using a knowledge of the device operations to identify the cause of the malfunction as to whether it can be corrected by the operator or is to be reported to a service firm.
DE-4	Manipulate switches, keys and levers using a knowledge of the device operations to correct malfunctions on a data entry device.
DE-5	Manipulate switches, keys and levers using a knowledge of the device operations to execute standard service functions, such as changing ribbons, cleaning screens, emptying chips and other such services.
DE-6	Analyze a job instruction using a knowledge of the specific device to determine record format operations, such as skipping, duplicating and shifting.
DE-7	Manipulate switches, keys and levers using a knowledge of the specific device to create a program to control record format operations such as skipping and duplicating.
DE-8	Manipulate switches and levers using a knowledge of the specific device to load a program to control record format operations such as skipping and duplicating.
DE-9	Manipulate knobs, levers, switches, and keys using a knowledge of the specific device to load media onto or into a device for keying data.
DE-10	Manipulate keys, switches and levers using a knowledge of the specific device to select a program format for a specific record.
DE-11	Manipulate keys, switches, and levers using a knowledge of the specific device to enter data onto a media.
DE-12	Manipulate keys, switches, and levers using a knowledge of the specific device to verify by machine the data previously entered into a media by a keying device.
DE-13	Analyze a data field using a knowledge of media coding to verify visually the data previously entered onto a media by a keying device.

Task No.	Task
DE-14	Manipulate keys, switches and levers using a knowledge of the specific device to duplicate data from one record to another.
DE-15	Manipulate keys, levers and switches using a knowledge of the specific device to update data contained in an existing record.
DE-16	Write job information using a knowledge of recording procedures to create a log of completed work.
DE-17	Analyze written descriptions in technical manuals using a knowledge of the device to resolve problems with device operations.
DE-18	Place media in a storage area using a knowledge of storage techniques to maintain a media file library in a logical sequence.
DE-19	Place media in protective containers using a knowledge of media storage techniques to store media.

COMPUTER OPERATIONS TASK

Task No.	Task
CO-1	Arrange a group of jobs to be executed on a computer using a knowledge of computer system performance to minimize the operational steps and overall run time.
CO-2	Analyze operating instructions using a knowledge of media used with a specific system to obtain the media needed for a specific job to be executed on the computer.
CO-3	Read operation instructions using a knowledge of computer operations procedures to identify the sequence of steps to be performed in completing a specific job on the computer.
CO-4	Inform persons who are assuming your duties of the status of operations using a knowledge of computer console operations and messages to maintain uninterrupted operations.
CO-5	Analyze operating instructions using a knowledge of peripheral equipment to identify devices needed for a specific job.
CO-6	Analyze operating instructions using a knowledge of peripheral equipment to identify the media to be used with a specific job.
CO-7	Place media in a storage area using a knowledge of storage techniques to maintain a media file library in a logical sequence.
CO-8	Manipulate protective containers using a knowledge of data storate techniques to store media in containers.
CO-9	Manipulate switches and keys on a computer console using a knowledge of computer console operations to power up and initialize a computer system.
CO-10	Manipulate switches and keys on a computer console using a knowledge of operating system commands for a specific system to reassign control functions such as priorities and memory allocations.
CO-11	Manipulate switches and keys on peripheral devices using a knowledge of specific devices to load media onto the device.
CO-12	Select job control commands using a knowledge of job control language to run a specific job on a computer system.
CO-13	Analyze messages produced on a console using a knowledge of messages produced by a specific operating system to identify the status of a job being processed by a computer.
CO-14	Analyze written descriptions in technical manuals using a knowledge of a specific job control language to interpret descriptions of job control statements for a specific computer system.

Task No.	Task
CO-15	Compare computer produced output to a job description sample using a knowledge of computer media output to verify the accuracy of a computer run.
CO-16	Write information in a log using a knowledge of computer operations to record information about completed jobs.
CO-17	Analyze machine generated output using a knowledge of computer operations to identify the cause of processing errors.
CO-18	Manipulate switches and keys on a computer console using a knowledge of a specific operating system to restart a program execution in which an abnormal halt has occurred.
CO-19	Manipulate levers, keys and switches on media devices using a knowledge of the specific devices to adjust operating performance of the device.
CO-20	Write information on labels using a knowledge of cataloging descriptions to identify specific media as to the data they contain.
CO-21	Manipulate levers, switches and keys on media devices using a knowledge of the specific device to complete routine servicing normally performed by the operator.
CO-22	Interpret device performance indicators using a knowledge of the specific device to identify a machine malfunction.
CO-23	Report verbally or in writing the malfunction of a device using a knowledge of the reporting procedure to notify service firms of the malfunction.
CO-24	Analyze operating instructions using a knowledge of back-up and restorations procedures to identify files that need back-up.
CO-25	Interpret system performance using a knowledge of system performance to identify system performance inefficiencies.

COMPUTER PROGRAMMING TASK

Task No.	Task
CP-1	Analyze a program request using a knowledge of programming techniques to prepare an estimate of the time involved in preparing and executing a computer program.
CP-2	Analyze a program request containing specifications using a knowledge of data processing equipment and techniques to prepare program documentation that describe the parameters necessary to produce the desired output.
CP-3	Analyze program specifications using a knowledge of file organizational types to prepare file specifications to be described in the program.
CP-4	Analyze program specifications using a knowledge of data characteristics to identify specific data characteristics to be described in the program.
CP-5	Analyze program specifications using a knowledge of programming techniques to construct a guide to code the logical steps of a program.
CP-6	Analyze written descriptions in technical manuals using a knowledge of a specific language to interpret descriptions of language statements and operating characteristics of a specific computer system.
CP-7	Write language statements using a knowledge of the specific language and program documents to produce a source program coded in a specific language.
CP-8	Review a source program using a knowledge of the specific language to identify coding errors within the source program prior to compilation.
CP-9	Key source statements into a device using a knowledge of the operating procedures of the device to produce computer readable source statements.
CP-10	Write job control statements using a knowledge of job control language and the specific operating systems to produce the instructions necessary to compile a source program into an object program.
CP-11	Analyze error notation produced by a computer using a knowledge of the specific language to identify syntax errors in the source program.
CP-12	Write source statements using a knowledge of the specific language and an error notation listing to produce corrected statements in a source program.

Task No.	Task
CP-13	Write job control statements using a knowledge of job control language and the specific operating system to produce the instructions necessary to execute an object program.
CP-14	Analyze output data produced by an object program using a knowledge of the test data to identify logical errors in the program.
CP-15	Write source statements using a knowledge of the specific language and output test data to produce a corected logical sequence in a source program.
CP-16	Write user instructions using a knowledge of the program logic and specifications to produce a user's manual.
CP-17	Analyze output of a test run with a user using a knowledge of the program requirements to obtain approval that the program is producing the desired results.
CP-18	Collect program listings, test data, and other specified documents using a knowledge of documentation to produce documentation of the design, coding and operation of the program.
CP-19	Analyze program documentation using a knowledge of programming techniques to produce a list of coding changes to a computer program.
CP-20	Write operating instructions using a knowledge of the program logic and specifications to produce an operations manual.
CP-21	Design data using a knowledge of data characteristics to test the logical correctness of a program.

Curriculum Worksheet

Duty No. DE

Task No. 1

Duty Performing Activities Related to Data Entry

Task Manipulate switches, keys and levers using a knowledge of the device operations to activate a data entry device.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Located the switches, keys or levers necessary to activate the device -	____	____
2. Manipulated the proper switches, keys or levers to provide power to the device -	____	____
3. Checked lights, sounds or other physical signs to assure the device was properly activated -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Transparency to illustrate location of switches, keys and levers.
3. Handout to illustrate location of switches, keys, and levers.

DUTY/TASK NUMBER DE-1

Student Learning Activities	Teacher Activities
1. Student(s) can read assigned text and related materials.	1. Use overhead projector and transparency to illustrate location of switches, keys, and levers on the various data entry devices.
2. Student(s) can discuss the procedure.	2. Provide a student handout illustrating the location of switches, keys, and levers on the various data entry devices.
3. Student(s) can list the steps for performing the procedure, either orally or in writing.	3. Demonstrate to the students the procedure for activating the data entry device.
4. Student(s) can perform the procedure.	4. Explain to students how to determine if power has been properly applied based on type of machine being used (lights come on, noise, sound).
	5. Observe students performing activation of data entry device.

DUTY/TASK NUMBER DE-1

Tools and/or Equipment

Data Entry Device

IBM 029 Card Punch Machine
IBM 129 Card Data Recorder
IBM 3742 Key-to-disk
IBM 5286 Data Entry Terminal
Mohawk Series 21 CRT
Burroughs MT 983 Data Entry Terminal

Actual hardware must be provided.

Conditions

Instruction and hands-on experience by the student should take place on hardware available in the classroom/lab or in a data processing installation

After student has been instructed where the power on-off switches are located on the device, the student will demonstrate in the lab area that the correct procedure for activating the data entry device

Criteria Competence in the task will be recognized when the procedure is performed as described in the manual for the data device.

DUTY/TASK NUMBER DE-1

Post-Test

Goal Statement #1 - You will know the procedure to activate a data entry device.

Performance Objective #1 - Given a data entry device, you will demonstrate the following procedure: activating a data entry device. Performance will be accepted when you can perform the procedure as observed by the instructor.

Goal Statement #2 - You will know the procedure for applying power to and removing power from the data entry device.

Performance Objective #2 - Given a data entry device you will demonstrate the following procedures: (a) apply power to a particular data entry device, (b) determine that the device is on. Performance is acceptable when student has successfully demonstrated to an instructor/aide the ability to apply power to a data entry device.

Goal Statement #3 - The student will know the procedure to activate a data entry device.

Performance Objective #3 - Given a data entry station the student will manipulate switches, keys, and levers using a knowledge of the device's operations to activate the data station with 100% accuracy using the operations manual as a check sheet.

Evaluation/Feedback

Curriculum Worksheet

Duty Performing Activities Related to Data Entry

Task Manipulate switches, keys and levers using a knowledge of the device operations to deactivate a data entry device.

Duty No. DE

Task No. 2

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Located the switches, keys, or levers necessary to deactivate the device -	____	____
2. Manipulated the proper switches, keys, or levers to discontinue the power to the device -	____	____
3. Checked lights, sounds or other physical signs to assure the device was properly deactivated -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Transparency to illustrate location of switches, keys, and levers.
3. Handout to illustrate location of switches, keys, and levers.

DUTY/TASK NUMBER DE-2

Student Learning Activities	Teacher Activities
1. Student can read assigned text and related materials.	1. Use overhead projector and transparency to illustrate location of switches, keys, and levers on the various data entry devices.
2. Student can discuss the procedure.	2. Provide a student handout illustrating the location of switches, keys, and levers on the various data entry devices.
3. Student can list the steps for performing the procedure, either orally or in writing.	3. Demonstrate to the students the procedure for deactivating the data entry device.
4. Student can observe the procedure being performed.	4. Observe students performing deactivating of data entry device.
5. Student can perform the procedure.	

DUTY/TASK NUMBER DE-2

Tools and/or Equipment

Data Entry Device

IBM 029 Card Punch Machine
IBM 129 Card Data Recorder
IBM 3742 Key disk
IBM 5286 Data Entry Terminal
Mohawk Series 21 CRT
Burroughs MT 983 Data Entry Terminal

Actual Hardware must be provided

Conditions

After student has been instructed where the power on-off switches are located on the device, the student will demonstrate in the lab area the correct procedure for deactivating the data entry device.

Instruction and hands-on experience by the student should take place on hardware available in the classroom/lab or in a data processing installation.

Criteria Competence in the task will be recognized when the procedures are performed as described in the manual for the data device.

Post-Test

Goal Statement #1 - You will know the procedure to deactivate a data entry device.

Performance Objective #1 - Given a data entry device you will demonstrate the following procedure: deactivating a data entry device. Performance will be accepted when you can perform the procedure as observed by the instructor.

Goal Statement #2 - You will know the procedure for removing power to the data entry device.

Performance Objective #2 - Given a data entry device, you will demonstrate the following procedure: (a) remove power from a particular data entry device, and (b) determine the device is off. Performance is acceptable when student has successfully demonstrated to an instructor/aide the ability to deactivate or remove power to a data entry device.

Goal Statement #3 - The student will know the procedure to deactivate a data entry device.

Performance Objective #3 - Given a data entry station the student will manipulate switches, keys, and levers using a knowledge of the device's operations to deactivate the data stations with 100% accuracy using the operations manual as a check sheet.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 3

Duty

Performing Activities Related to Data Entry

Task

Analyze device malfunctions using a knowledge of the device operations to identify the cause of the malfunction as to whether it can be corrected by the operator or is to be reported to a service firm.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Manipulated switches, keys or levers to activate operating functions on the device -	____	____
2. Identified any fuction which did not operate properly -	____	____
3. Classified the malfunction as to whether it could be corrected by an operator or reported to a service firm by referencing an operating manual for the device -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout listing common malfunctions of data entry devices.
3. Maintenance Log.

DUTY/TASK NUMBER DE-3

Student Learning Activities	Teacher Activities
1. Student can read from operator's manual.	1. Explain procedure for correcting malfunctions, i.e., card jams, keyboard lockups, etc.
2. Student can review various types of error indicators based upon machine being operated from a handout.	2. Explain procedure and forms for logging in maintenance record.
3. Student can discuss solutions to various kinds of machine malfunctions.	3. Provide handout of error conditions from reference manual of various data entry devices.
4. Student can learn procedure for notifying instructor of any problem that student cannot correct.	4. Observe students.
5. Student can perform minor repairs.	
6. Student can keep a log of maintenance/repair service required.	

DUTY/TASK NUMBER DE-3

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by the student should take place in the classroom/lab or in a data processing facility.

Criteria Competence in the task will be recognized when the malfunction has been labeled as to whether it can be corrected by the operator or must be reported to a service firm.

Post-Test

Goal Statement #1 - You will be able to analyze and determine the cause of a device malfunction.

Performance Objective #1 - Given a data entry device that is malfunctioning, you will (a) determine cause of malfunction, (b)determine if malfunction can be corrected by operator, and (c) request repair service. Performance will be accepted when malfunction is labeled as correctable by operator or a request for repair service is recorded.

Goal Statement #2 - You will know how to identify the causes of hardware malfunction and determine whether it can be corrected or if service is required.

Performance Objective #2 - Given a list of error conditions, you will in writing determine the error as to whether it can be fixed by the data entry operatory or by maintenance service. Performance is acceptable when student can correctly identify all error conditions in writing and as to whether it is fixable by the operator or outside service maintenance is required.

Goal Statement #3 - The student will analyze the malfunction and determine whether it can be corrected by the operator or reported to a service firm.

Performance Objective #3 - Given a data station and a list of possible malfunctions, the student will analyze the device for possible malfunctions and based on the malfunctions listed, designate those malfunctions to be corrected by the operator or by the service firm. Performance will be accepted when the student can properly analyze the device and designate with 100% accuracy who shall correct the malfunction.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 4

Duty Performing Activities Related to Data Entry

Task Manipulate switches, keys, and levers using a knowledge of the device operations to correct malfunctions on a data entry device.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Manipulated switches, keys or levers to activate an operating function in the device -		
2. Determined the cause of a malfunction by observing lights, sounds, or physical movements -		
3. Manipulated switches, keys, levers or tools to correct the malfunction -		

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout of common malfunctions and correcting procedures.
3. Maintenance Log.

DUTY/TASK NUMBER DE-4

Student Learning Activities	Teacher Activities
1. Student can read from operator's manual and related materials.	1. Provide students with handout listing common machine malfunctions.
2. Student can observe common malfunctions and procedures for correcting malfunctions.	2. Explain procedure for correcting malfunctions, i.e., card jams, keyboard lockups, etc.
3. Student can perform minor repairs.	3. Explain procedure and forms for logging in maintenance/repair record.
4. Student can keep a log of maintenance/repair service required.	4. Observe students correcting malfunctions.

DUTY/TASK NUMBER DE-4

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by the student should take place on hardware available in the classroom/lab or in a data processing installation.

Criteria Competence in the task will be recognized when the malfunction has been corrected and the device performs the operation properly.

Post-Test

Goal Statement #1 - You will be able to determine when a malfunction of a data entry device has been corrected.

Performance Objective #1 - Given a data entry device, you will be able to determine when a malfunction has been corrected. Performance will be accepted when the device is operating properly.

Goal Statement #2 - You will be able to correct equipment malfunctions which occurs on your data entry device.

Performance Objective #2 - Given the opportunity, you will demonstrate your knowledge of the equipment by correcting common errors or malfunctions as they may occur during the normal operation of the equipment. Performance will be accepted if you can perform the proper steps to the solving of the malfunction and verify these corrective measures with the instructor/aide.

Goal Statement #3 - The student will manipulate switches, keys, levers, or tools to correct the malfunction.

Performance Objective #3 - Given a data station, appropriate tools, and a list of typical malfunctions, the student will demonstrate the proper way to manipulate switches, keys, levers, and/or tools to correct the malfunctions listed. Performance will be accepted when the student can properly demonstrate by selecting the correct tools and manipulating the proper switches, keys, and levers to correct the listed malfunction with 100% accuracy.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 5

Duty Performing Activities Related to Data Entry

Task Manipulate switches, keys, and levers using a knowledge of the device operations to execute standard service functions, such as changing ribbons, cleaning screens, emptying chips and other such services.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Selected the tools, media and cleaning materials appropriate to complete the service function -	____	____
2. Manipulated keys, switches, levers, and knobs to provide access to the area to be serviced on the device -	____	____
3. Cleaned, replaced or removed materials from the device according to procedure described in the operations manual -	____	____
4. Checked each serviced area by performing operations, such as testing the function with data or observing lights, sounds or physical movements as described in the manual -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout showing step by step procedure for changing ribbons, cleaning screens, emptying chips or other service functions.
3. Transparency showing procedures for performing service functions.
4. Handout giving locations of supplies to perform service functions.
5. Maintenance Log showing dates and/or times when service should be performed.

Student Learning Activities

1. Student can read operator's manual and related materials.
2. Student can observe services being performed.
3. Student can list items to be done daily, weekly, or periodically.
4. Student can:
    a. change device ribbon.
    b. clean equipment by emptying chips, cleaning screens, etc.
    c. recommend service on equipment.
5. Student can record maintenance performed on appropriate form.

Teacher Activities

1. Provide students with handouts of various service functions to be performed on equipment.
2. Explain services that are to be performed daily, weekly, or periodically.
3. Demonstrate how to service the device.
4. Develop video-tape or slide presentation showing demonstration of servicing equipment.
5. Explain procedure for recording maintenance performed in appropriate log.
6. Observe students performing maintenance.

DUTY/TASK NUMBER DE-5

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	After instructions have been provided to the students, this activity will take place when needed by equipment or as provided for in a maintenance schedule given to students

Criteria Competence in the task will be recognized when the device has been serviced according to the operator's manual.

DUTY/TASK NUMBER | DE-5

Post-Test

Goal Statement #1 - You will know how to perform normal service functions on the data entry equipment in the lab area.

Performance Objective #1 - Given a data entry device, you will demonstrate the following procedure: (a) changing a ribbon, (b) cleaning screens on CRT devices, and (c) emptying card hole punches. Performance will be accepted when you can perform the procedure as observed by instructor/aide.

Goal Statement #2 - You will be able to service a data entry device.

Performance Objective #2 - A. Given a data entry device, you will be able to perform necessary maintenance. B. Given a data entry device, ribbon and diagram of ribbon mechanism, you will be able to change the ribbon. Performance will be accepted when you can perform the maintenance and change the ribbon according to operator's manual.

Goal Statement #3 - The student will manipulate switches, keys, and levers to execute standard service functions, i.e., changing ribbons, cleaning screens, emptying chips, etc.

Performance Objective #3 - Given a data station, ribbons, cleaning towels, and waste receptacle, the student will demonstrate using the proper switches, keys, and levers, the correct method to execute standard service functions. Performance will be accepted when you can perform the procedures as observed by the instructor and as prescribed by the operations manual.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 6

Duty Performing Activities Related to Data Entry

Task Analyze a job instruction using a knowledge of the specific device to determine record format operations, such as skipping, duplicating and shifting.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Classified each field as to the type of formatting operations to be performed using a job instruction form -	____	____
2. Wrote the operations and the record location of each field on the job form -	____	____

References & Resources

1. Reference Manual for specific hardware being used.
2. Transparency to illustrate layout form.
3. Handouts or related materials for job.

DUTY/TASK NUMBER DE-6

Student Learning Activities	Teacher Activities
1. Student can plan and classify fields on layout form.	1. Discuss record formatting.
2. Student can indicate appropriate codes on form.	2. Provide handouts of job instruction forms and layout.
3. Student can record location of fields on job form.	3. Use overhead projector and transparency to illustrate job instruction form and layout form.
4. Student can discuss types of fields used: numeric, alpha, right and left justification, skip fields, dup fields, etc.	4. Observe students.

DUTY/TASK NUMBER DE-6

Tools and/or Equipment	Conditions
Rulers Pencils Record layout forms Keypunch layout forms	Instruction should take place in the classroom/lab or in a data processing facility.

Criteria Competence in the task will be recognized when all fields within a record have been correctly classified for formatting purposes according to the job instructions.

DUTY/TASK NUMBER DE-6

Post-Test

Goal Statement #1 - You will be able to determine record format operations.

Performance Objective #1 - Given a presentation on record formatting, you will be able to classify fields and record location according to job instructions.

Goal Statement #2 - You will be able to determine the type of fields as used in a record for data recording.

Performance Statement #2 - Given a list of various types of fields used in a record to store data, you will be able to determine by labeling each field as a skip, numeric, alpha, or duplication. Performance will be accepted when a student can with 100% accuracy identify and label each field correctly.

Goal Statement #3 - The student will analyze job instructions to determine record formatting operations, i.e., skipping, duplicating, shifting, etc.

Performance Objective #3 - Given a data station and job instructions, the student will determine the appropriate record format operations by writing the correct operations and location of each field of the record(s) on the job form. The results should match those of a predetermined key or keys.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 7

Duty Performing Activities Related to Data Entry

Task Manipulate switches, keys and levers using a knowledge of the specific device to create a program to control record format operations such as skipping and duplicating.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Using a job instruction form, keyed the codes or characters necessary to control the formatting operation into a memory or media -	____	____
2. Manipulated switches, keys, and levers to read the control record image into memory or placed it on the appropriate unit -	____	____

References & Resources

1. Reference Manual.
2. Handout to show step by step procedures for creating a program on specific hardware being used.
3. Transparency to illustrate necessary format for a specific job application.

DUTY/TASK NUMBER DE-7

Student Learning Activities	Teacher Activities
1. Student can read module or preparing program for entry into data entry device.	1. Demonstrate keying program codes.
2. Student can list in writing the field formats that would be necessary to create a program.	2. Demonstrate reading control record image into memory.
3. Student can key program information into a memory or onto media.	3. Use overhead projector and transparency of sample job to illustrate format that would be used for a job application such as payroll, inventory, etc.
4. Student can read record image into memory.	4. Observe students performing procedure.

DUTY/TASK NUMBER DE-7

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual Hardware must be provided. Input media.	Instructions and hands-on experience by the student should take place on hardware available in a classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when a formatting control record or memory unit is created to correctly control the formatting operations according to the job instructions.

Post-Test

Goal Statement #1 - You can create a program to control record format operations.

Performance Objective #1 - Given a data entry device and job instruction form, you will be able to key the codes or characters into a memory or media to control the formatting operations according to the job instructions.

Goal Statement #2 - You will know how to set-up a program to be used to control skipping, duplicating and other formats on a data entry device.

Performance Objective #2 - Given a data entry device, you will demonstrate the following procedure: (a) to be able to set-up using the proper codes, a minimum of two types of data entry jobs, and (b) complete either verbal or written questions as to codes used by a particular hardware device that are used in setting up a program. Performance will be accepted when you can perform the procedure as observed by instructor/aide and successfully score 90% or better on identifying the correct codes used by the hardware device.

Goal Statement #3 - The student will create a program to control record format operations, i.e., skipping, duplicating, etc.

Performance Objective #3 - Given a data station and completed job form(s), the student will manipulate the proper switches, keys, and levers to create a program to control record format operations that will match a predetermined program.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 8

Duty Performing Activities Related to Data Entry

Task Manipulate switches and levers using a knowledge of the specific device to load a program to control record format operations such as skipping and duplicating.

Pre-Test (Same as Achievement Indicators)

The learner: Yes No

1. Using a job instruction form, keyed the codes or characters necessary to control the formatting operation into a memory or media - ____ ____
2. Manipulated switches, keys and levers to read the control record image into memory or placed it on the appropriate unit - ____ ____

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout showing proper steps in sequence to be used to load program.

DUTY/TASK NUMBER DE-8

Student Learning Activities	Teacher Activities
1. Student can read text and related materials. 2. Student can observe loading program for automatic operation of data entry device. 3. Student can list the steps in writing according to hardware being trained on. 4. Student can load program.	1. Provide a handout showing procedures or steps to follow in loading of program. 2. Demonstrate loading program for automatic operation of data entry device. 3. Observe students performing procedure. 4. Use a video-tape or slide presentation of student at machine performing steps. 5. Create a tape recorded step by step procedure for each type of machine to be used by student.

DUTY/TASK NUMBER DE-8

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by the student should take place on hardware available in the classroom/lab or in a data processing facility.

Criteria Competence in the task will be recognized when a formatting control record or memory unit is loaded to correctly control the formatting operations according to job instructions.

Post-Test

Goal Statement #1 - You will know the procedure to load a program for automatic operation of the data entry device.

Performance Objective #1 - Given a data entry device, a job instruction for, you can follow the procedure to: (a) key the codes to control formatting and (b) read the control record image into memory. Performance will be accepted when you can load the program according to the operator's manual.

Goal Statement #2 - You will know how to load a program correctly into a data entry device.

Performance Objective #2 - Given a data entry device, you will demonstrate the following procedure: (a) the proper steps to be taken to successfully load a job control program into a data entry device. Performance will be accepted when you can perform the steps correctly as observed by instructor/aide using correct procedures for loading of a program.

Goal Statement #3 - The student will load a program(s) to control record format operations such as skipping, duplicating, etc.

Performance Objective #3 - Given a data station, completed job form and/or control record image the student will manipulate the proper switches, keys, and levers to load the program(s) to control record format operations. Performance will be accepted when you can perform the procedure as observed by the instructor or using the operations manual as a check sheet.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 9

Duty

Performing Activities Related to Data Entry

Task

Manipulate knobs, levers, switches, and keys using a knowledge of the specific device to load media onto or into a device for keying data.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Selected the proper media to be loaded into the data entry device according to a job description -	____	____
2. Positioned media to be correctly loaded -	____	____
3. Manipulated knobs, keys, switches, or levers to prepare the devices for loading -	____	____
4. Inserted the media according to an operation manual -	____	____
5. Manipulated knobs, keys, levers, and switches to adjust the media into the correct position -	____	____

References & Resources

1. Reference manual for specific hardware being used.
2. Handout showing correct loading position.

DUTY/TASK NUMBER DE-9

Student Learning Activities	Teacher Activities
1. Student can read text and related materials. 2. Student can observe demonstration of loading media. 3. Student can load media.	1. Discuss loading media. 2. Demonstrate loading media. 3. Prepare video-tape or slide presentation demonstrating how to load media. 4. Observe students loading media.

DUTY/TASK NUMBER DE-9

Post-Test

Goal Statement #1 - You will load media onto or into a device for keying data.

Performance Objective #1 - Given a data entry device and input media, you will load media according to instructions in operator's manual.

Goal Statement #2 - You will know the correct procedure for loading of a diskette or other form of recording media into a data entry device.

Performance Objective #2 - Given a data entry device, you will demonstrate the following procedure: loading and unloading of a diskette or other recording media. Performance will be acceptable when you can perform the procedure correctly as judged by the instructor/aide.

Goal Statement #3 - The student will load media into or onto a device for keying data.

Performance Objective #3 - Given a data station and media for the station, the student will manipulate the appropriate knobs, levers, switches, and keys to load the media onto or into a device for keying data. Performance will be accepted when you can perform the procedure as observed by the instructor or using the operations manual as a check sheet.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 10

Duty

Performing Activities Related to Data Entry

Task

Manipulate keys, switches, and levers using a knowledge of the specific device to select a program format for a specific record.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the data entry device -	____	____
2. Loaded more than one program record format into memory or on the drum -	____	____
3. Manipulated keys, switches and levers to activate a specific program record format -	____	____

References & Resources

1. Reference manual for specific hardware being used.
2. Handout listing proper steps.

DUTY/TASK NUMBER DE-10

Student Learning Activities	Teacher Activities
1. Student can read from text and related materials. 2. Student can observe: a. proper handling of media. b. loading program. c. keying of master data. 3. Student can review steps taken to load program and insert recording media. 4. Student can perform the procedure.	1. Provide students with a handout listing proper steps in the procedure. 2. Demonstrate proper handing of input media. 3. Demonstrate loading program into memory. 4. Demonstrate keying of master data. 5. Observe students keying data.

DUTY/TASK NUMBER DE-10

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughts MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by the student should take place on hardware available in the classroom/lab or in a data processing facility.

Criteria Competence in the task will be recognized when a record has been keyed using the specified program format.

DUTY/TASK NUMBER DE-10

Post-Test

Goal Statement #1 - You will know how to key a record for a specific program.

Performance Objective #1 - Given a data entry device, you can key a record using the instructions for a specific program. Performance will be accepted when you have keyed the record correctly.

Goal Statement #2 - You will know the procedure for selecting a specific program.

Performance Objective #2 - Given a data entry device, you will demonstrate the following procedure: (a) selecting a program that is needed in order to key a particular job and (b) keying a record using the selected program. Performance will be accepted when you can perform the procedure as observed by the instructor/aide.

Goal Statement #3 - The student will select the proper program format for keying in a specific record.

Performance Objective #3 - Given a data station, completed job form, loaded format programs, and loaded media the student will select the correct program format for a specific record by properly manipulating the appropriate keys, switches, and levers. Performance will be accepted when a record has been keyed using the specific program and matched with a correctly keyed record.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 11

Duty Performing Activities Related to Data Entry

Task Manipulate keys, switches, and levers using a knowledge of the specific device to enter data onto a media.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the data entry device -	____	____
2. Loaded media into the device -	____	____
3. Activated appropriate program format guide -	____	____
4. Depressed keys to enter the data into the data entry device onto the media according to the source document -	____	____

References & Resources

1. Job instructions and source documents.
2. Reference manual for specific hardware being used.
3. Transparency illustrating entry procedural steps and screen indicators.

DUTY/TASK NUMBER DE-11

Student Learning Activities	Teacher Activities
1. Student can review job instructions and source document. 2. Student can activate device. 3. Student can load media into device. 4. Student can key data from source documents onto appropriate media.	1. Use overhead projector to illustrate screen indicators during entry of data. 2. Discuss instructions for keying job. 3. Observe students keying data from source documents onto media.

DUTY/TASK NUMBER DE-11

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided. Input media.	Instruction and hands-on experience by the student should take place on the hardware available in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when a source document has been copied or entered through the data entry device to the specified media.

DUTY/TASK NUMBER DE-11

Post-Test

Goal Statement #1 - You will enter data onto a media.

Performance Objective #1 - Given a data entry device, you will be able to key data from a source document onto the specifiee media. Performance will be accepted when data has been recorded correctly onto the media.

Goal Statement #2 - You will be able to enter data from a source document into a data entry device.

Performance Objective #2 - Given a data entry device and an assigned job, you will key the data into the device. Performance will be acceptable when the job has been keyed with 95% accuracy or better.

Goal Statement #3 - The student will manipulate keys, switches, and levers to enter data onto a media.

Performance Objective #3 - Given a data station, completed job form, source documents, media and format program(s) the student will manipulate the proper keys, switches, and levers to enter data onto a media with a key stroke rate of 7500/hr., and an accuracy rate of 95%. Performance will be matched against 100% correct pre-punched control deck and/or file.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 12

Duty Performing Activities Related to Data Entry

Task Manipulate keys, switches, and levers using a knowledge of the specific device to verify by machine the data previously entered into a media by a keying device.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the device -	____	____
2. Loaded previously keyed media into the device -	____	____
3. Selected the appropriate program format guide -	____	____
4. Using a source document, keyed the data for each record -	____	____
5. If an error occurred, re-keyed the data until the error field was identified and/or corrected -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout of verification steps for machine.

DUTY/TASK NUMBER DE-12

Student Learning Activities	Teacher Activities
1. Student can read operator's manual and related materials.	1. Use overhead projector and transparency to illustrate verification procedures.
2. Student can observe procedure for machine verification.	2. Discuss procedure for machine verification.
3. Student can perform procedure for machine verification.	3. Demontrate procedure for machine verification.
	4. Observe students performing procedure.

DUTY/TASK NUMBER DE-12

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience should take place on hardware available in the classroom/lab or in a data processing facility.

Criteria Competence in the task will be recognized when data previously keyed has been verified and all errors have been identified and/or corrected.

DUTY/TASK NUMBER DE-12

Post-Test

Goal Statement #1 - You will know the procedure for verifying data by machine.

Performance Objective #1 - Given a data entry device, program format guide, source document, and previously keyed data, you can verify data according to the verification procedures in operator's manual. Performance will be accepted when all errors have been identified and corrected.

Goal Statement #2 - You will know the correct procedural steps to verify and how to correct errors discovered during verification.

Performance Objective #2 - Given a data entry device and a previous keyed job on a diskette you will: (a) properly set up machine for verification as observed by instructor aide, (b) verify the data according to established procedures for your equipment, and (c) record the number of errors and corrections made to diskette. Performance will be acceptable when you can perform the procedure above and can correct 100% of all errors encountered on the data diskette.

Goal Statement #3 - The student will manipulate keys, switches, and levers to verify data previously entered into a media.

Performance Objective #3 - Given a data station with a verification feature, completed job form, source documents pre-recorded media and format program(s) the student will manipulate the proper keys, switches, and levers to verify data previously recorded onto a media with a key stroke rate of 7500/hr., an accuracy rate of 100%. Performance will be matched against a 100% correct deck and/or file.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 13

Duty Performing Activities Related to Data Entry

Task Analyze a data field using a knowledge of media coding to verify visually the data previously entered onto a media by a keying device.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Using a source document that has been keyed through a data entry device into a media, compared the data fields in the source document with the data in the media -	____	____
2. Compared each character and each position of each character and noted any differences by marking or changing the data field -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Source document.

DUTY/TASK NUMBER DE-13

Student Learning Activities	Teacher Activities
1. Student can visually compare data on media with data from source document.	1. Discuss procedure for visual verification.
2. Student can observe the machine operations necessary to get machine in verify mode.	2. Observe students.
3. Student can view overlay of a sample source document and an overlay of actually recorded data with an error.	3. Demonstrate operations necessary to get machine in verify mode.

DUTY/TASK NUMBER DE-13

Tools and/or Equipment	Conditions
Source document Data Set	Lab area is used for allowing the students to scan through a data file in search of errors. The student will reference a set of source documents.

Criteria Competence in the task will be recognized when the data in the keyed media is identified as being correct or in error according to a source document.

DUTY/TASK NUMBER DE-13

Post-Test

Goal Statement #1 - You will know the procedure for visual verification of data.

Performance Objective #1 - Given a presentation on visual verification, you will be able to visually compare data in source document with data in media and indicate differences by marking or changing the incorrect data field.

Goal Statement #2 - You will be able to visually see and identify errors in a data record as compared with a source document.

Performance Objective #2 - Given a data entry device and source document, the student will: (a) identify differences in the source document and data and (b) identify the type of error in the data. Performance will be acceptable when a student has identified a minimum of 95% of the errors in the data.

Goal Statement #3 - The student will analyze and verify visually data previously recorded onto a media.

Performance Objective #3 - Given a source document and data previously recorded onto a media, the student will visually verify the data comparing each character and its position and noting any differences by marking or changing the data field. Performance will be matched against a 100% correct pre-recorded control deck and/or file.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 14

Duty Performing Activities Related to Data Entry

Task Manipulate keys, switches, and levers using a knowledge of the specific device to duplicate data from one record to another.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Activated the data entry device -	____	____
2. Inserted a media record containing data into the proper position in the data entry device -	____	____
3. Inserted a blank media record into the proper position in the data entry device -	____	____
4. Depressed keys, switches and levers necessary to duplicate data from one media record into a blank media record -	____	____

References & Resources

1. Reference manual for the specific hardware being used.

DUTY/TASK NUMBER DE-14

Student Learning Activities	Teacher Activities
1. Student can observe procedure for duplicating records.	1. Discuss procedure for duplicating records.
2. Student can perform procedure.	2. Demonstrate procedure for duplicating records.
	3. Observe students performing the procedure.

DUTY/TASK NUMBER DE-14

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided. Input media.	Instruction and hands-on experience by student should take place on hardware available in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the data has been duplicated from one record to another according to job instructions.

Post-Test

Goal Statement #1 - You will know the procedure for duplicating data from one record to another.

Performance Objective #1 - Given a data entry device and demonstration on duplicating data from one record to another, you will be able to duplicate data from one media record into a blank media record. Performance will be accepted when the data has been duplicated from one record to another according to job instructions.

Goal Statement #2 - You will know the procedure to successfully copy one or more records from one diskette to another blank diskette.

Performance Objective #2 - Given a data entry device and a diskette with data recorded on it the student will copy one or more records to a blank diskette. Performance will be accepted when you can perform the proper procedures for copying as observed by instructor/aide and the data has been visually verified to have been copied from one diskette to the blank diskette.

Goal Statement #3 - The student will duplicate data from one record to another.

Performance Objective #3 - Given a data station, data pre-recorded on a media, and non-recorded media, the student will demonstrate by manipulating the proper keys, switches, and levers necessary to duplicate data from one media record into a non-recorded media record with 100% accuracy. Performance will be matched against the original pre-recorded media record, the two record(s) should match 100%.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 15

Duty

Performing Activities Related to Data Entry

Task

Manipulate keys, levers, and switches using a knowledge of the specific device to update data contained in an existing record.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Retrieved a record from a file according to a procedure for the specific application -	____	____
2. Keyed data into the device to add, delete or change the existing data according to a source document -	____	____
3. Verified visually the updated data -	____	____
4. Returned the updated record back to the file -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout of updating procedures.
3. Transparency of flowchart to illustrate updating procedures.
4. Practice diskette set-up to change records or information within record.

DUTY/TASK NUMBER DE-15

Student Learning Activities	Teacher Activities
1. Student can read handouts and related materials.	1. Discuss procedures for updating records.
2. Student can observe illustrations of updating procedures.	2. Use overhead projector and transparency of flowchart to illustrate updating of records.
3. Student can observe demonstration of updating procedures.	3. Demonstrate to students on a device the steps to call up a record, update, and replace record.
4. Student can perform updating procedures.	4. Observe students performing the procedure.

DUTY/TASK NUMBER DE-15

Tools and/or Equipment	Conditions
Data Entry Device IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by students should take place on hardware available in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the changes have been made to the record in the file according to a job description.

DUTY/TASK NUMBER DE-15

Post-Test

Goal Statement #1 - You will know the procedure for updating an existing record.

Performance Objective #1 - Given a data entry device, you will be able to make changes to a record in the file according to a job description.

Goal Statement #2 - You will know how to retrieve a record, modify the data, and re-record the record on the diskette.

Performance Objective #2 - Given a data entry device, a pre-recorded diskette, you will demonstrate: (a) how to retrieve a record from the diskette, (b) how to correct and update data in the record, and (c) how to re-record the record to the diskette. Performance will be accepted when you can perform a minimum of 10 corrections or updates to a diskette as verified by the instructor/aide.

Goal Statement #3 - The student will update data contained in an existing record.

Performance Objective #3 - Given a data station, completed job form(s), source document(s), format program(s), and pre-recorded data record(s) the student will manipulate the proper keys, levers, and switches to update data contained in an existing record by eitheradding, deleting, or changing the data within the record. Performance will be either visually verified or matched against a correctly pre-recorded record.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 16

Duty Performing Activities Related to Data Entry

Task Write job information using a knowledge of recording procedures to create a log of completed work.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Selected the work log for the specificed date -	____	____
2. Wrote the entries necessary to describe or document the completed work according to a procedure used by the specific firm -	____	____
3. Verified the entries by comparing the completed work with each required entry on the log -	____	____

References & Resources

1. Job Log.

DUTY/TASK NUMBER DE-16

Student Learning Activities	Teacher Activities
1. Student can record entries on log for purpose of documentation.	1. Discuss procedure for recording job information.
2. Student can verify entries recorded in job log.	2. Provide form for recording information.
	3. Observe that procedure is being followed.

DUTY/TASK NUMBER DE-16

Tools and/or Equipment	Conditions
Job Log	Instruction should take place in classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the entries have been made in a log that documents all completed work according to a procedure used by the specific firm.

DUTY/TASK NUMBER DE-16

Post-Test

Goal Statement #1 - You will know the procedure for recording information in a job log.

Performance Objective #1 - Given a job log and recording procedures, you will be able to record and verify entries of completed work according to procedure established by data processing facility.

Goal Statement #2 - You will know the procedure used for logging jobs keyed and also verified.

Performance Objective #2 - Given sample logging sheets, you will identify correctly categories for entry and properly fill-out a sample job log sheet. Performance will be accepted when entries are made correctly as verified by an instructor/aide.

Goal Statement #3 - The student will write job information in a log that documents all completed work.

Performance Objective #3 - Given a documentation log and list of recording procedures for a specific firm the student will write job information as prescribed by the list of recording procedures. The student's log will be matched against a similar or identical log of completed work.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 17

Duty Performing Activities Related to Data Entry

Task Analyze written descriptions in technical manuals using a knowledge of the device to resolve problems with device operations.

Pre-Test (Same as Achievement Indicators)

The learner:

	Yes	No
1. Selected the appropriate manual for the device -	____	____
2. Located the description of the function or problem in the manual -	____	____
3. Used the description in the manual to resolve the problem and/or perform the function on the device -	____	____

References & Resources

1. Technical manuals.
2. Handout giving possible problems and solutions.
3. Sample technical failure problems for students to solve.

DUTY/TASK NUMBER DE-17

Student Learning Activities	Teacher Activities
1. Student can read from technical manual and related materials.	1. Discuss technical manual for device.
2. Student can use manual to resolve technical problems.	2. Provide handout that reviews some common technical machine problems and their solution.
	3. Explain error messages or codes displayed by equipment and how to locate in technical manual.

DUTY/TASK NUMBER DE-17

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughts MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by student should take place in classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when a problem or function has been resolved and/or performed according to procedures for the specific device.

DUTY/TASK NUMBER DE-17

Post-Test

Goal Statement #1 - You will know how to use a technical manual for a specific data entry device.

Performance Objective #1 - Given a technical manual, you will be able to use the manual to resolve problems with a data entry device.

Goal Statement #2 - You will be able to properly analyze device malfunctions or problems by using the technical manual for the device.

Performance Objective #2 - Given two practice problems dealing with various equipment problems, you will in writing give corresponding solutions to the problems listing the steps taken to obtain that solution.

Goal Statement #3 - The student will analyze written descriptions in technical manuals to resolve problems with data station operations.

Performance Objective #3 - Given a data station, operator's manual(s), and a list of problems, the student will use the operator's manual to analyze and resolve the list of problems by either describing the manual's approach or by performing the function on the device itself. Performance or descriptions will be accepted when the student can properly select the appropriate technical manual and locate the correct descriptions in the manual(s) to resolve the problems.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 18

Duty Performing Activities Related to Data Entry

Task Place media in a storage area using a knowledge of storage techniques to maintain a media file library in a logical sequence.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the media to be stored -	____	____
2. Located the storage position in a media library according to the sequence used by the firm for the specific file -	____	____
3. Placed or stored the media in the library -	____	____

References & Resources

1. Handout of storage techniques and file organization.

DUTY/TASK NUMBER DE-18

Student Learning Activities	Teacher Activities
1. Student can read related materials.	1. Discuss procedures for storing and retrieving media.
2. Student can follow procedure for storing and retrieving media.	2. Observe students performing procedure.

DUTY/TASK NUMBER DE-18

Tools and/or Equipment	Conditions
Library storage area.	Instruction should take place in classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the media has been positioned in the file according to the file organization used by the specific firm.

Post-Test

Goal Statement #1 - You will know the procedure for storing and retrieving media.

Performance Objective #1 - Given a presentation on file organization and storage techniques, you will store and retrieve media according to procedure established by the data processing facility.

Goal Statement #2 - You will know the procedure that is needed to properly record and store media such as a diskette in a organized manner.

Performance Objective #2 - Student will with 100% accuracy complete a label for a diskette or other recorded media and properly place in a file library. Performance will be accepted when the learner has successfully completed the task as verified by the instructor/aide.

Goal Statement #3 - The student will place media in a storage media area containing a media file library in a logical sequence.

Performance Objective #3 - Given a media file library and media, the student will place the media in the correct media file and in the correct logical sequence within the file according to the file organization used by the specific firm. Performance will be accepted when the student can perform the procedure as observed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 19

Duty Performing Activities Related to Data Entry

Task Place media in protective containers using a knowledge of media storage techniques to store media.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the container or storage device appropriate for the media -	____	____
2. Opened the container according to techniques for the specific media -	____	____
3. Placed the media in the container according to techniques for the specific media -	____	____
4. Closed the container according to techniques for the specific media -	____	____

References & Resources

1. Handout of storage techniques.

DUTY/TASK NUMBER DE-19

Student Learning Activities	Teacher Activities
1. Student can read related materials.	1. Discuss procedure placing media in protective containers.
2. Student can observe demonstration of procedure by instructor.	2. Demonstrate to students the correct procedure to follow in handling media from the storage container to the device and back again.
3. Student can perform procedure for placing media in protective containers.	3. Observe students performing the procedure.

DUTY/TASK NUMBER DE-19

Tools and/or Equipment	Conditions
Protective Containers. Media: Tape, diskette.	Instruction should take place in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the media has been placed in a protective storage container according to storage techniques for the specific firm.

DUTY/TASK NUMBER DE-19

Post-Test

Goal Statement #1 - You will know the procedure for placing media in protective containers.

Performance Objective #1 - Given a presentation on media storage techniques, you will place media in protective containers according to procedure established by the data processing facility.

Goal Statement #2 - You will know the correct procedures for storing recorded media, both from and to the data entry devices.

Performance Objective #2 - Given a form of media, student will demonstrate the proper storage of that media in a protective cover. Performance will be accepted when you can perform the procedure as observed by instructor/aide using the correct procedures.

Goal Statement #3 - The student will place media in protective containers according to storage techniques for the specific firm.

Performance Objective #3 - Given media, protective containers, and an instruction list, the student will select the appropriate container, open it, place the media in it, and close the container according to storage techniques for the specific firm. Performance will be accepted when the student can perform the procedure as observed by the instructor.

Evaluation/Feedback

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Curriculum Worksheet

Duty No. CO

Task No. 1

Duty

Performing Activities Related to Computer Operations

Task

Arrange a group of jobs to be executed on a computer using a knowledge of computer system performance to minimize the operational steps and overall run time.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Obtained a list of jobs to be executed -		
2. Estimated the amount of run time needed for input for each job -		
3. Estimated the amount of processing time needed for each job -		
4. Estimated the amount of run time needed for output for each job -		
5. Classified jobs that use common media forms and devices -		
6. Classified jobs as to whether they were input, process or output bound -		
7. Arranged jobs in an order that would minimize input/output media handling -		
8. Arranged jobs in an order to minimize contention for processing cycles -		

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-1

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.	1. Assign reading materials.
2. Discuss task with teacher and/or other students.	2. Demonstrate sample (practice) task(s).
3. Observe performance of task by teacher and/or other students.	3. Develop unit/module to demonstrate task(s).
4. Discuss the method of scheduling used at this installation.	4. Develop handout of step by step procedure to complete task(s).
5. Listen to lecture on task.	5. Develop sample (practice) task(s).
6. Perform sample (practice) task(s).	6. Lecture on the task.
	7. Develop comprehensive test materials.

DUTY/TASK NUMBER CO-1

Tools and/or Equipment	Conditions
Computer system (actual or simulated) List of jobs to be completed See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when a list of jobs is prepared that will minimize operational steps and the run time according to procedures specified by the firm.

Post-Test

Goal Statement #1 - The student will arrange a group of jobs to be executed on the computer to minimize the operational steps and overall run time.

Performance Objective #1 - Given a computer system and a list of jobs, job specifications, and a systems log, the student will: (a) analyze the job specifications and the system log to determine total amount of run time needed; (b) arrange the jobs to minimize operator intervention; (c) arrange the jobs to minimize run time; and (d) enter the job control instructions into the computer (if one is available). Competence will be accepted when the student can perform the procedure as observed by the instructor/aid using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 2

Duty Performing Activities Related to Computer Operations

Task Analyze operating instructions, using a knowledge of media forms used with a specific system, to obtain the media needed for a specific job to be executed on the computer.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Located the descriptions of the media to be used with the job in the operating instructions -	____	____
2. Obtained each media from its storage location -	____	____
3. Assembled the media at the computer operations area -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-2

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Listen to lecture on task.
6. Observe audio-visual presentation on task.

Teacher Activities

1. Lecture on concepts of the task.
2. Assign reading materials.
3. Observe student performance.
4. Demonstrate sample (practice) task(s).
5. Develop unit/module to demonstrate task(s).
6. Develop handouts to review task(s).
7. Develop sample (practice) task(s).
8. Develop comprehensive test materials.

DUTY/TASK NUMBER CO-2

Tools and/or Equipment	Conditions
Media, i.e., punch cards, forms, magnetic tape, and magnetic disk (actual media must be provided) Run manual See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task using the media available in the classroom/lab or at a data processing installation

Criteria Competence in the task will be recognized when all media has been collected for the job according to the job description.

DUTY/TASK NUMBER DE-9

Student Learning Activities	Teacher Activities
1. Student can read text and related materials.	1. Discuss loading media.
2. Student can observe demonstration of loading media.	2. Demonstrate loading media.
3. Student can load media.	3. Prepare video-tape or slide presentation demonstrating how to load media.
	4. Observe students loading media.

DUTY/TASK NUMBER DE-9

Post-Test

Goal Statement #1 - You will load media onto or into a device for keying data.

Performance Objective #1 - Given a data entry device and input media, you will load media according to instructions in operator's manual.

Goal Statement #2 - You will know the correct procedure for loading of a diskette or other form of recording media into a data entry device.

Performance Objective #2 - Given a data entry device, you will demonstrate the following procedure: loading and unloading of a diskette or other recording media. Performance will be acceptable when you can perform the procedure correctly as judged by the instructor/aide.

Goal Statement #3 - The student will load media into or onto a device for keying data.

Performance Objective #3 - Given a data station and media for the station, the student will manipulate the appropriate knobs, levers, switches, and keys to load the media onto or into a device for keying data. Performance will be accepted when you can perform the procedure as observed by the instructor or using the operations manual as a check sheet.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 10

Duty Performing Activities Related to Data Entry

Task Manipulate keys, switches, and levers using a knowledge of the specific device to select a program format for a specific record.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the data entry device -	____	____
2. Loaded more than one program record format into memory or on the drum -	____	____
3. Manipulated keys, switches and levers to activate a specific program record format -	____	____

References & Resources

1. Reference manual for specific hardware being used.
2. Handout listing proper steps.

DUTY/TASK NUMBER DE-10

Student Learning Activities	Teacher Activities
1. Student can read from text and related materials.	1. Provide students with a handout listing proper steps in the procedure.
2. Student can observe: a. proper handling of media. b. loading program. c. keying of master data.	2. Demonstrate proper handing of input media.
3. Student can review steps taken to load program and insert recording media.	3. Demonstrate loading program into memory.
4. Student can perform the procedure.	4. Demonstrate keying of master data.
	5. Observe students keying data.

DUTY/TASK NUMBER DE-10

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughts MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by the student should take place on hardware available in the classroom/lab or in a data processing facility.

Criteria Competence in the task will be recognized when a record has been keyed using the specified program format.

DUTY/TASK NUMBER DE-10

Post-Test

Goal Statement #1 - You will know how to key a record for a specific program.

Performance Objective #1 - Given a data entry device, you can key a record using the instructions for a specific program. Performance will be accepted when you have keyed the record correctly.

Goal Statement #2 - You will know the procedure for selecting a specific program.

Performance Objective #2 - Given a data entry device, you will demonstrate the following procedure: (a) selecting a program that is needed in order to key a particular job and (b) keying a record using the selected program. Performance will be accepted when you can perform the procedure as observed by the instructor/aide.

Goal Statement #3 - The student will select the proper program format for keying in a specific record.

Performance Objective #3 - Given a data station, completed job form, loaded format programs, and loaded media the student will select the correct program format for a specific record by properly manipulating the appropriate keys, switches, and levers. Performance will be accepted when a record has been keyed using the specific program and matched with a correctly keyed record.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 11

Duty Performing Activities Related to Data Entry

Task Manipulate keys, switches, and levers using a knowledge of the specific device to enter data onto a media.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the data entry device -	____	____
2. Loaded media into the device -	____	____
3. Activated appropriate program format guide -	____	____
4. Depressed keys to enter the data into the data entry device onto the media according to the source document -	____	____

References & Resources

1. Job instructions and source documents.
2. Reference manual for specific hardware being used.
3. Transparency illustrating entry procedural steps and screen indicators.

DUTY/TASK NUMBER DE-11

Student Learning Activities	Teacher Activities
1. Student can review job instructions and source document.	1. Use overhead projector to illustrate screen indicators during entry of data.
2. Student can activate device.	2. Discuss instructions for keying job.
3. Student can load media into device.	3. Observe students keying data from source documents onto media.
4. Student can key data from source documents onto appropriate media.	

DUTY/TASK NUMBER DE-11

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided. Input media.	Instruction and hands-on experience by the student should take place on the hardware available in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when a source document has been copied or entered through the data entry device to the specified media.

DUTY/TASK NUMBER DE-11

Post-Test

Goal Statement #1 - You will enter data onto a media.

Performance Objective #1 - Given a data entry device, you will be able to key data from a source document onto the specifiee media. Performance will be accepted when data has been recorded correctly onto the media.

Goal Statement #2 - You will be able to enter data from a source document into a data entry device.

Performance Objective #2 - Given a data entry device and an assigned job, you will key the data into the device. Performance will be acceptable when the job has been keyed with 95% accuracy or better.

Goal Statement #3 - The student will manipulate keys, switches, and levers to enter data onto a media.

Performance Objective #3 - Given a data station, completed job form, source documents, media and format program(s) the student will manipulate the proper keys, switches, and levers to enter data onto a media with a key stroke rate of 7500/hr., and an accuracy rate of 95%. Performance will be matched against 100% correct pre-punched control deck and/or file.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 12

Duty Performing Activities Related to Data Entry

Task Manipulate keys, switches, and levers using a knowledge of the specific device to verify by machine the data previously entered into a media by a keying device.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the device -		
2. Loaded previously keyed media into the device -		
3. Selected the appropriate program format guide -		
4. Using a source document, keyed the data for each record -		
5. If an error occurred, re-keyed the data until the error field was identified and/or corrected -		

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout of verification steps for machine.

DUTY/TASK NUMBER DE-12

Student Learning Activities	Teacher Activities
1. Student can read operator's manual and related materials.	1. Use overhead projector and transparency to illustrate verification procedures.
2. Student can observe procedure for machine verification.	2. Discuss procedure for machine verification.
3. Student can perform procedure for machine verification.	3. Demontrate procedure for machine verification.
	4. Observe students performing procedure.

DUTY/TASK NUMBER DE-12

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience should take place on hardware available in the classroom/lab or in a data processing facility.

Criteria Competence in the task will be recognized when data previously keyed has been verified and all errors have been identified and/or corrected.

Post-Test

Goal Statement #1 - You will know the procedure for verifying data by machine.

Performance Objective #1 - Given a data entry device, program format guide, source document, and previously keyed data, you can verify data according to the verification procedures in operator's manual. Performance will be accepted when all errors have been identified and corrected.

Goal Statement #2 - You will know the correct procedural steps to verify and how to correct errors discovered during verification.

Performance Objective #2 - Given a data entry device and a previous keyed job on a diskette you will: (a) properly set up machine for verification as observed by instructor aide, (b) verify the data according to established procedures for your equipment, and (c) record the number of errors and corrections made to diskette. Performance will be acceptable when you can perform the procedure above and can correct 100% of all errors encountered on the data diskette.

Goal Statement #3 - The student will manipulate keys, switches, and levers to verify data previously entered into a media.

Performance Objective #3 - Given a data station with a verification feature, completed job form, source documents pre-recorded media and format program(s) the student will manipulate the proper keys, switches, and levers to verify data previously recorded onto a media with a key stroke rate of 7500/hr., an accuracy rate of 100%. Performance will be matched against a 100% correct deck and/or file.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 13

Duty Performing Activities Related to Data Entry

Task Analyze a data field using a knowledge of media coding to verify visually the data previously entered onto a media by a keying device.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Using a source document that has been keyed through a data entry device into a media, compared the data fields in the source document with the data in the media -	____	____
2. Compared each character and each position of each character and noted any differences by marking or changing the data field -	____	____

References & Resources

1. Reference manual for the specific hardware being used.
2. Source document.

DUTY/TASK NUMBER DE-13

Student Learning Activities	Teacher Activities
1. Student can visually compare data on media with data from source document.	1. Discuss procedure for visual verification.
2. Student can observe the machine operations necessary to get machine in verify mode.	2. Observe students.
3. Student can view overlay of a sample source document and an overlay of actually recorded data with an error.	3. Demonstrate operations necessary to get machine in verify mode.

DUTY/TASK NUMBER DE-13

Tools and/or Equipment	Conditions
Source document Data Set	Lab area is used for allowing the students to scan through a data file in search of errors. The student will reference a set of source documents.

Criteria Competence in the task will be recognized when the data in the keyed media is identified as being correct or in error according to a source document.

DUTY/TASK NUMBER DE-13

Post-Test

Goal Statement #1 - You will know the procedure for visual verification of data.

Performance Objective #1 - Given a presentation on visual verification, you will be able to visually compare data in source document with data in media and indicate differences by marking or changing the incorrect data field.

Goal Statement #2 - You will be able to visually see and identify errors in a data record as compared with a source document.

Performance Objective #2 - Given a data entry device and source document, the student will: (a) identify differences in the source document and data and (b) identify the type of error in the data. Performance will be acceptable when a student has identified a minimum of 95% of the errors in the data.

Goal Statement #3 - The student will analyze and verify visually data previously recorded onto a media.

Performance Objective #3 - Given a source document and data previously recorded onto a media, the student will visually verify the data comparing each character and its position and noting any differences by marking or changing the data field. Performance will be matched against a 100% correct pre-recorded control deck and/or file.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 14

Duty Performing Activities Related to Data Entry

Task Manipulate keys, switches, and levers using a knowledge of the specific device to duplicate data from one record to another.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the data entry device -	____	____
2. Inserted a media record containing data into the proper position in the data entry device -	____	____
3. Inserted a blank media record into the proper position in the data entry device -	____	____
4. Depressed keys, switches and levers necessary to duplicate data from one media record into a blank media record -	____	____

References & Resources

1. Reference manual for the specific hardware being used.

DUTY/TASK NUMBER DE-14

Student Learning Activities	Teacher Activities
1. Student can observe procedure for duplicating records.	1. Discuss procedure for duplicating records.
2. Student can perform procedure.	2. Demonstrate procedure for duplicating records.
	3. Observe students performing the procedure.

DUTY/TASK NUMBER DE-14

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided. Input media.	Instruction and hands-on experience by student should take place on hardware available in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the data has been duplicated from one record to another according to job instructions.

DUTY/TASK NUMBER DE-14

Post-Test

Goal Statement #1 - You will know the procedure for duplicating data from one record to another.

Performance Objective #1 - Given a data entry device and demonstration on duplicating data from one record to another, you will be able to duplicate data from one media record into a blank media record. Performance will be accepted when the data has been duplicated from one record to another according to job instructions.

Goal Statement #2 - You will know the procedure to successfully copy one or more records from one diskette to another blank diskette.

Performance Objective #2 - Given a data entry device and a diskette with data recorded on it the student will copy one or more records to a blank diskette. Performance will be accepted when you can perform the proper procedures for copying as observed by instructor/aide and the data has been visually verified to have been copied from one diskette to the blank diskette.

Goal Statement #3 - The student will duplicate data from one record to another.

Performance Objective #3 - Given a data station, data pre-recorded on a media, and non-recorded media, the student will demonstrate by manipulating the proper keys, switches, and levers necessary to duplicate data from one media record into a non-recorded media record with 100% accuracy. Performance will be matched against the original pre-recorded media record, the two record(s) should match 100%.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 15

Duty Performing Activities Related to Data Entry

Task Manipulate keys, levers, and switches using a knowledge of the specific device to update data contained in an existing record.

Pre-Test (Same as Achievement Indicators)

The learner: Yes No

1. Retrieved a record from a file according to a procedure for the specific application - _____ _____
2. Keyed data into the device to add, delete or change the existing data according to a source document - _____ _____
3. Verified visually the updated data - _____ _____
4. Returned the updated record back to the file - _____ _____

References & Resources

1. Reference manual for the specific hardware being used.
2. Handout of updating procedures.
3. Transparency of flowchart to illustrate updating procedures.
4. Practice diskette set-up to change records or information within record.

DUTY/TASK NUMBER DE-15

Student Learning Activities	Teacher Activities
1. Student can read handouts and related materials.	1. Discuss procedures for updating records.
2. Student can observe illustrations of updating procedures.	2. Use overhead projector and transparency of flowchart to illustrate updating of records.
3. Student can observe demonstration of updating procedures.	3. Demonstrate to students on a device the steps to call up a record, update, and replace record.
4. Student can perform updating procedures.	4. Observe students performing the procedure.

DUTY/TASK NUMBER DE-15

Tools and/or Equipment	Conditions
Data Entry Device IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughs MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by students should take place on hardware available in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the changes have been made to the record in the file according to a job description.

DUTY/TASK NUMBER DE-15

Post-Test

Goal Statement #1 - You will know the procedure for updating an existing record.

Performance Objective #1 - Given a data entry device, you will be able to make changes to a record in the file according to a job description.

Goal Statement #2 - You will know how to retrieve a record, modify the data, and re-record the record on the diskette.

Performance Objective #2 - Given a data entry device, a pre-recorded diskette, you will demonstrate: (a) how to retrieve a record from the diskette, (b) how to correct and update data in the record, and (c) how to re-record the record to the diskette. Performance will be accepted when you can perform a minimum of 10 corrections or updates to a diskette as verified by the instructor/aide.

Goal Statement #3 - The student will update data contained in an existing record.

Performance Objective #3 - Given a data station, completed job form(s), source document(s), format program(s), and pre-recorded data record(s) the student will manipulate the proper keys, levers, and switches to update data contained in an existing record by eitheradding, deleting, or changing the data within the record. Performance will be either visually verified or matched against a correctly pre-recorded record.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 16

Duty Performing Activities Related to Data Entry

Task Write job information using a knowledge of recording procedures to create a log of completed work.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the work log for the specificed date -	____	____
2. Wrote the entries necessary to describe or document the completed work according to a procedure used by the specific firm -	____	____
3. Verified the entries by comparing the completed work with each required entry on the log -	____	____

References & Resources

1. Job Log.

DUTY/TASK NUMBER DE-16

Student Learning Activities	Teacher Activities
1. Student can record entries on log for purpose of documentation.	1. Discuss procedure for recording job information.
2. Student can verify entries recorded in job log.	2. Provide form for recording information.
	3. Observe that procedure is being followed.

DUTY/TASK NUMBER DE-16

Tools and/or Equipment	Conditions
Job Log	Instruction should take place in classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the entries have been made in a log that documents all completed work according to a procedure used by the specific firm.

DUTY/TASK NUMBER DE-16

Post-Test

Goal Statement #1 - You will know the procedure for recording information in a job log.

Performance Objective #1 - Given a job log and recording procedures, you will be able to record and verify entries of completed work according to procedure established by data processing facility.

Goal Statement #2 - You will know the procedure used for logging jobs keyed and also verified.

Performance Objective #2 - Given sample logging sheets, you will identify correctly categories for entry and properly fill-out a sample job log sheet. Performance will be accepted when entries are made correctly as verified by an instructor/aide.

Goal Statement #3 - The student will write job information in a log that documents all completed work.

Performance Objective #3 - Given a documentation log and list of recording procedures for a specific firm the student will write job information as prescribed by the list of recording procedures. The student's log will be matched against a similar or identical log of completed work.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 17

Duty Performing Activities Related to Data Entry

Task Analyze written descriptions in technical manuals using a knowledge of the device to resolve problems with device operations.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the appropriate manual for the device -	____	____
2. Located the description of the function or problem in the manual -	____	____
3. Used the description in the manual to resolve the problem and/or perform the function on the device -	____	____

References & Resources

1. Technical manuals.
2. Handout giving possible problems and solutions.
3. Sample technical failure problems for students to solve.

DUTY/TASK NUMBER DE-17

Student Learning Activities	Teacher Activities
1. Student can read from technical manual and related materials. 2. Student can use manual to resolve technical problems.	1. Discuss technical manual for device. 2. Provide handout that reviews some common technical machine problems and their solution. 3. Explain error messages or codes displayed by equipment and how to locate in technical manual.

DUTY/TASK NUMBER DE-17

Tools and/or Equipment	Conditions
Data Entry Device IBM 029 Card Punch Machine IBM 129 Card Data Recorder IBM 3742 Keydisk IBM 5286 Data Entry Terminal Mohawk Series 21 CRT Burroughts MT 983 Data Entry Terminal Actual hardware must be provided.	Instruction and hands-on experience by student should take place in classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when a problem or function has been resolved and/or performed according to procedures for the specific device.

DUTY/TASK NUMBER DE-17

Post-Test

Goal Statement #1 - You will know how to use a technical manual for a specific data entry device.

Performance Objective #1 - Given a technical manual, you will be able to use the manual to resolve problems with a data entry device.

Goal Statement #2 - You will be able to properly analyze device malfunctions or problems by using the technical manual for the device.

Performance Objective #2 - Given two practice problems dealing with various equipment problems, you will in writing give corresponding solutions to the problems listing the steps taken to obtain that solution.

Goal Statement #3 - The student will analyze written descriptions in technical manuals to resolve problems with data station operations.

Performance Objective #3 - Given a data station, operator's manual(s), and a list of problems, the student will use the operator's manual to analyze and resolve the list of problems by either describing the manual's approach or by performing the function on the device itself. Performance or descriptions will be accepted when the student can properly select the appropriate technical manual and locate the correct descriptions in the manual(s) to resolve the problems.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 18

Duty Performing Activities Related to Data Entry

Task Place media in a storage area using a knowledge of storage techniques to maintain a media file library in a logical sequence.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the media to be stored -		
2. Located the storage position in a media library according to the sequence used by the firm for the specific file -		
3. Placed or stored the media in the library -		

References & Resources

1. Handout of storage techniques and file organization.

DUTY/TASK NUMBER DE-18

Student Learning Activities	Teacher Activities
1. Student can read related materials.	1. Discuss procedures for storing and retrieving media.
2. Student can follow procedure for storing and retrieving media.	2. Observe students performing procedure.

DUTY/TASK NUMBER DE-18

Tools and/or Equipment	Conditions
Library storage area.	Instruction should take place in classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the media has been positioned in the file according to the file organization used by the specific firm.

DUTY/TASK NUMBER DE-18

Post-Test

Goal Statement #1 - You will know the procedure for storing and retrieving media.

Performance Objective #1 - Given a presentation on file organization and storage techniques, you will store and retrieve media according to procedure established by the data processing facility.

Goal Statement #2 - You will know the procedure that is needed to properly record and store media such as a diskette in a organized manner.

Performance Objective #2 - Student will with 100% accuracy complete a label for a diskette or other recorded media and properly place in a file library. Performance will be accepted when the learner has successfully completed the task as verified by the instructor/aide.

Goal Statement #3 - The student will place media in a storage media area containing a media file library in a logical sequence.

Performance Objective #3 - Given a media file library and media, the student will place the media in the correct media file and in the correct logical sequence within the file according to the file organization used by the specific firm. Performance will be accepted when the student can perform the procedure as observed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. DE

Task No. 19

Duty Performing Activities Related to Data Entry

Task Place media in protective containers using a knowledge of media storage techniques to store media.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the container or storage device appropriate for the media -	____	____
2. Opened the container according to techniques for the specific media -	____	____
3. Placed the media in the container according to techniques for the specific media -	____	____
4. Closed the container according to techniques for the specific media -	____	____

References & Resources

1. Handout of storage techniques.

DUTY/TASK NUMBER DE-19

Student Learning Activities	Teacher Activities
1. Student can read related materials.	1. Discuss procedure placing media in protective containers.
2. Student can observe demonstration of procedure by instructor.	2. Demonstrate to students the correct procedure to follow in handling media from the storage container to the device and back again.
3. Student can perform procedure for placing media in protective containers.	3. Observe students performing the procedure.

DUTY/TASK NUMBER DE-19

Tools and/or Equipment	Conditions
Protective Containers. Media: Tape, diskette.	Instruction should take place in the classroom/lab or data processing facility.

Criteria Competence in the task will be recognized when the media has been placed in a protective storage container according to storage techniques for the specific firm.

Post-Test

Goal Statement #1 - You will know the procedure for placing media in protective containers.

Performance Objective #1 - Given a presentation on media storage techniques, you will place media in protective containers according to procedure established by the data processing facility.

Goal Statement #2 - You will know the correct procedures for storing recorded media, both from and to the data entry devices.

Performance Objective #2 - Given a form of media, student will demonstrate the proper storage of that media in a protective cover. Performance will be accepted when you can perform the procedure as observed by instructor/aide using the correct procedures.

Goal Statement #3 - The student will place media in protective containers according to storage techniques for the specific firm.

Performance Objective #3 - Given media, protective containers, and an instruction list, the student will select the appropriate container, open it, place the media in it, and close the container according to storage techniques for the specific firm. Performance will be accepted when the student can perform the procedure as observed by the instructor.

Evaluation/Feedback

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Curriculum Worksheet

Duty No. CO

Task No. 1

Duty

Performing Activities Related to Computer Operations

Task

Arrange a group of jobs to be executed on a computer using a knowledge of computer system performance to minimize the operational steps and overall run time.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Obtained a list of jobs to be executed -	____	____
2. Estimated the amount of run time needed for input for each job -	____	____
3. Estimated the amount of processing time needed for each job -	____	____
4. Estimated the amount of run time needed for output for each job -	____	____
5. Classified jobs that use common media forms and devices -	____	____
6. Classified jobs as to whether they were input, process or output bound -	____	____
7. Arranged jobs in an order that would minimize input/output media handling -	____	____
8. Arranged jobs in an order to minimize contention for processing cycles -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-1

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Discuss the method of scheduling used at this installation.
5. Listen to lecture on task.
6. Perform sample (practice) task(s).

Teacher Activities

1. Assign reading materials.
2. Demonstrate sample (practice) task(s).
3. Develop unit/module to demonstrate task(s).
4. Develop handout of step by step procedure to complete task(s).
5. Develop sample (practice) task(s).
6. Lecture on the task.
7. Develop comprehensive test materials.

DUTY/TASK NUMBER CO-1

Tools and/or Equipment	Conditions
Computer system (actual or simulated) List of jobs to be completed See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when a list of jobs is prepared that will minimize operational steps and the run time according to procedures specified by the firm.

DUTY/TASK NUMBER CO-1

Post-Test

Goal Statement #1 - The student will arrange a group of jobs to be executed on the computer to minimize the operational steps and overall run time.

Performance Objective #1 - Given a computer system and a list of jobs, job specifications, and a systems log, the student will: (a) analyze the job specifications and the system log to determine total amount of run time needed; (b) arrange the jobs to minimize operator intervention; (c) arrange the jobs to minimize run time; and (d) enter the job control instructions into the computer (if one is available). Competence will be accepted when the student can perform the procedure as observed by the instructor/aid using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO
Task No. 2

Duty Performing Activities Related to Computer Operations

Task Analyze operating instructions, using a knowledge of media forms used with a specific system, to obtain the media needed for a specific job to be executed on the computer.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Located the descriptions of the media to be used with the job in the operating instructions -	____	____
2. Obtained each media from its storage location -	____	____
3. Assembled the media at the computer operations area -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-2

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Listen to lecture on task.
6. Observe audio-visual presentation on task.

Teacher Activities

1. Lecture on concepts of the task.
2. Assign reading materials.
3. Observe student performance.
4. Demonstrate sample (practice) task(s).
5. Develop unit/module to demonstrate task(s).
6. Develop handouts to review task(s).
7. Develop sample (practice) task(s).
8. Develop comprehensive test materials.

DUTY/TASK NUMBER CO-2

Tools and/or Equipment	Conditions
Media, i.e., punch cards, forms, magnetic tape, and magnetic disk (actual media must be provided) Run manual See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task using the media available in the classroom/lab or at a data processing installation

Criteria Competence in the task will be recognized when all media has been collected for the job according to the job description.

DUTY/TASK NUMBER CO-2

Post-Test

Goal Statement #1 - The student will obtain media for a specific job to be executed on the computer.

Performance Objective #1 - Given various media and a run manual, the student will select the appropriate media for the job. Competence will be accepted when the student can perform the procedure as observed by the instructor/aid using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 3

Duty Performing Activities Related to Computer Operations

Task Read operation instructions using a knowledge of computer operations procedures to identify the sequence of steps to be performed in completing a specific job on the computer.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Read a job description in a run manual and noted the sequence of steps to be performed -	____	____
2. Performed each of the steps in sequence to complete the job -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-3

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module. 2. Discuss task with teacher and/or other students. 3. Observe performance of task by teacher and/or other students. 4. Perform sample (practice) task(s). 5. Observe audio-visual presentation on the task.	1. Demonstrate sample (practice) task(s). 2. Develop unit/module to demonstrate task(s). 3. Develop audio-visual presentation. 4. Develop handout to review task(s). 5. Develop sample (practice) task(s). 6. Observe student performance of task. 7. Develop comprehensive test materials.

DUTY/TASK NUMBER CO-3

Tools and/or Equipment	Conditions
Computer (actual or simulated) Run manual See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task using the materials available in the classroom/lab

Criteria Competence in the task will be recognized when the job has been performed according to the run manual.

DUTY/TASK NUMBER CO-3

Post-Test

Goal Statement #1 - The student will demonstrate an ability to sequence the steps necessary to complete a specific job on the computer.

Performance Objective #1 - Given a computer and a run manual, the student will sequence the steps necessary to complete the job. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 4

Duty Performing Activities Related to Computer Operations

Task Inform persons who are assuming your duties of the status of operations using a knowledge of computer console operations and messages to maintain uninterrupted operations.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Manipulated keys to display on the console the status of each job currently being processed by the computer -	____	____
2. Analyzed the current status of all jobs using job schedules and the console display -	____	____
3. Informed persons assuming duties of the current status of all jobs -	____	____
4. Informed persons assuming duties of any special conditions -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-4

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-4

Tools and/or Equipment	Conditions
Computer (actual or simulated) Run manual Job log See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task using the materials available in the classroom/lab

Criteria Competence in the task will be recognized when the relieving person can assume your duties without processing interruption according to a job schedule document.

DUTY/TASK NUMBER CO-4

Post-Test

Goal Statement #1 - The student will demonstrate an ability to relay the status of the computer to relief persons in order to maintain uninterrupted operations.

Performance Objective #1 - Given a computer, run manual, job log, and appropriate console messages the student will: (a) analyze the job queue; (b) analyze the current job status; (c) interpret the console messages; and (d) inform the relief persons of the status of all jobs. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 5

Duty Performing Activities Related to Computer Operations

Task Analyze operating instructions using a knowledge of peripheral equipment to identify devices needed for a specific job.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Located the descriptions of the devices to be used with the job in the operating instructions -	____	____
2. Noted each device to be used with the specific job -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-5

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-5

Tools and/or Equipment	Conditions
Computer (actual or simulated) Run manual Peripheral equipment (actual or simulated) See "Supplemntal Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task using the materials available in the classroom/lab

Criteria Competence in the task will be recognized when all the devices for a specific job have been identified.

DUTY/TASK NUMBER CO-5

Post-Test

Goal Statement #1 - The student will demonstrate ability to select devices needed for a specific job.

Performance Objective #1 - Given a computer, run manual, and peripheral equipment the student will: (a) identify devices needed for a specific job and (b) select devices needed for a specific job. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 6

Duty Performing Activities Related to Computer Operations

Task Analyze operating instructions using a knowledge of peripheral equipment to identify the media to be used with a specific job.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Located the descriptions of the media needed for the specific job in the operating instructions -	____	____
2. Noted each type of media to be used with the specific job -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-6

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Development sample (practice) task(s).
6. Observe student perform of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-6

Tools and/or Equipment	Conditions
Computer (actual or simulated) Run manual Peripheral equipment (actual or simulated) See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task using the materials available in the classroom/lab

Criteria Competence in the task will be recognized when all media has been identifed for the specific job according to a run manual.

DUTY/TASK NUMBER CO-6

Post-Test

Goal Statement #1 - The student will demonstrate ability to select media for a specific job.

Performance Objective #1 - Given a computer system, run manual, peripheral equipment, and assorted media the student will: (a) analyze the operating instructions for a specific job; (b) identify the appropriate media for a specific job; and (c) select the appropriate media for a specific job. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 7

Duty

Performing Activities Related to Computer Operations

Task

Place media in a storage area using a knowledge of storage techniques to maintain a media file library in a logical sequence.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Assembled the media that has been used with a specific job -	____	____
2. Located the storage positions for each media in a file maintained by the specific firm -	____	____
3. Placed each media into the file in the proper location using a knowledge of the organization method for the file -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-7

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.	1. Demonstrate sample (practice) task(s).
2. Discuss task with teacher and/or other students.	2. Develop unit/module to demonstrate task(s).
3. Observe performance of task by teacher and/or other students.	3. Develop audio-visual presentation.
4. Perform sample (practice) task(s).	4. Development handout to review task(s).
5. Observe audio-visual presentation on the task.	5. Develop sample (practice) task(s).
6. Listen to lecture on the task.	6. Observe student performance of task.
	7. Develop comprehensive test materials.
	8. Give lecture on the task.
	9. Develop applicable media system library.

DUTY/TASK NUMBER CO-8

Tools and/or Equipment	Conditions
File library system Media (actual or simulated) See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when the media has been placed in a file storage area correctly.

DUTY/TASK NUMBER CO-7

Post-Test

Goal Statement #1 - The student will demonstrate an ability to maintain a media file library.

Performance Objective #1 - Given a file library system and media to be stored or located, the student will: (a) store the media in the library in proper sequence; (b) locate media in the library for a specific job; and (c) maintain the records necessary to locate the media when needed. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 8

Duty

Performing Activities Related to Computer Operations

Task

Manipulate protective containers using a knowledge of data storage techniques to store media in containers.

Pre-Test (**Same as Achievement Indicators**)

The learner:	Yes	No
1. Selected the container for the specific media -	____	____
2. Opened the container according to techniques for the specific media -	____	____
3. Inserted the media into the container -	____	____
4. Closed the container according to the techniques for the specific media -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-8

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.	1. Demonstrate sample (practice) task(s).
2. Discuss task with teacher and/or other students.	2. Develop unit/module to demonstrate task(s).
3. Observe performance of task by teacher and/or other students.	3. Develop audio-visual presentation.
4. Perform sample (practice) task(s).	4. Develop handout to review (task(s).
5. Observe audio-visual presentation on the task.	5. Develop sample (practice) task(s).
6. Listen to lecture on the task.	6. Observe student performance of task.
	7. Develop comprehensive test materials.
	8. Given lecture on the task.

DUTY/TASK NUMBER CO-8

Tools and/or Equipment	Conditions
Media with protective containers (actual media must be provided) See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when the media is placed into the protective container.

DUTY/TASK NUMBER CO-8

Post-Test

Goal Statement #1 - The student will demonstrate an ability to properly store media in appropriate protective containers.

Performance Objective #1 - Given media with protective containers the student will: (a) select the appropriate container for the media; (b) open container according to specifications; (c) properly place the media in the container; and (d) close the container according to specifications. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 9

Duty

Performing Activities Related to Computer Operations

Task

Manipulate switches and keys on a computer console using a knowledge of computer console operations to power up and initialize a computer system.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the instructions describing how to power up the computer from a shut down condition -		
2. Observed console messages to determine when each step was to be taken to initialize the system -		
3. Entered commands or data as directed by the console messages -		

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-9

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-9

Tools and/or Equipment	Conditions
Computer system (actual media must be provided) See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when the power up procedure is completed according to the procedure described in the operations manual.

Post-Test

Goal Statement #1 - The student will demonstrate an ability to apply electrical power to the system and initilize the system.

Performance Objective #1 - Given a computer system the student will: (a) properly apply electrical power to the system and (b) properly initilize the system. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 10

Duty Performing Activities Related to Computer Operations

Task Manipulate switches and keys on a computer console using a knowledge of operating system commands for a specific system to reassign control functions such as priorities and memory allocations.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the operations manual describing jobs to be run -	____	____
2. Determined console commands that reassign allocations/priorities to jobs -	____	____
3. Entered commands through the console to reassign memory allocations and/or priorities of each job to be run -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-10

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-10

Tools and/or Equipment	Conditions
Computer system List of jobs List of memory allocations to be changed (Actual hardware must be provided. The computer system must have the capability of changing priorities and/or memory allocations) See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when jobs have been reassigned memory allocations and priorities according to the operations manual.

DUTY/TASK NUMBER | CO-10

Post-Test

Goal Statement #1 - The student will demonstrate an ability to reassign control functions.

Performance Objective #1 - Given a computer system, a list of jobs, a list of priority changes, and a list of memory allocation changes the student will: (a) determine commands to change memory allocations; (b) determine commands to change priority assignments; (c) enter commands to change memory allocations; and (d) enter commands to change priority assignments. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 11

Duty

Performing Activities Related to Computer Operations

Task

Manipulate switches and keys on peripheral devices using a knowledge of specific devices to load media on to the device.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated the specific device -		
2. Manipulated switches, keys or levers to ready the device for media insertion -		
3. Inserted media into or onto the device -		
4. Manipulated switches, keys or levers to ready the device for use -		

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-11

Student Learning Activities

1. Read assigned materials, i.e., text computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-11

Tools and/or Equipment	Conditions
Peripheral devices Media for peripheral devices (actual hardware and media must be provided.) See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when media has been loaded onto the specific device according to a procedure described in the operations manual.

DUTY/TASK NUMBER CO-11

Post-Test

Goal Statement #1 - The student will demonstrate an ability to load media onto a device.

Performance Objective #1 - Given peripheral devices and media for the peripheral devices the student will: (a) activate a peripheral device; (b) manipulate the switches, keys, and levers to ready the device for media insertion; (c) properly load the media onto the device; and (d) manipulate switches, keys, and levers to ready the device for use. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO
Task No. 12

Duty

Performing Activities Related to Computer Operations

Task

Select job control commands using a knowledge of job control language to run a specific job on a computer system.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the job control commands to perform each function of the job -		
2. Arranged the commands in the proper sequence of the job stream -		
3. Performed the job as described in the run manual -		

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-12

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-12

Tools and/or Equipment	Conditions
Computer system (actual or simulated) Run manuals Job Control manual See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when a job as been executed correctly on the computer according to a run manual.

DUTY/TASK NUMBER CO-12

Post-Test

Goal Statement #1 - The student will select the Job Control commands necessary to run a specific job on the computer.

Performance Objective #1 - Given a computer system, run manuals, and a Job Control manual the student will: (a) select the proper Job Control commands to run a specific job and (b) arrange the commands in proper sequence. Competence will be recognized when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 13

Duty Performing Activities Related to Computer Operations

Task Analyze messages produced on a console using a knowledge of messages produced by a specific operating system to identify the status of a job being processed by a computer.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Depressed keys on the console to display messages documenting the status of computer operations -	____	____
2. Read messages displayed upon the console -	____	____
3. Used technical manuals to interpret the messages so that a proper response could be made by the operator -	____	____
4. Depressed keys to make the proper response -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-13

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-13

Tools and/or Equipment	Conditions
Computer system (actual hardware must be provided) Run manuals See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or at a data processing installation

Criteria Competence in the task will be recognized when a proper response is made to the message by the operator.

Post-Test

Goal Statement #1 - The student will demonstrate an ability to analyze system operating messages and determine the status of a job being processed.

Performance Objective #1 - Given a computer system, run manuals, and system console messages the student will: (a) read the messages displayed on the console; (b) analyze the messages displayed on the console; and (c) determine the status of a job being processed by the computer. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 14

Duty Performing Activities Related to Computer Operations

Task Analyze written descriptions in technical manuals using a knowledge of a specific job control language to interpret descriptions of job control statements for a specific computer system.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the correct technical manual for job control language -	____	____
2. Located the description for the specific job -	____	____
3. Interpreted information concerning the specific function -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-14

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit module.	1. Demonstrate sample (practice) task(s).
2. Discuss task with teacher and/or other students.	2. Develop unit/module to demonstrate task(s).
3. Observe performance of task by teacher and/or other students.	3. Develop audio-visual presentation.
4. Perform sample (practice) task(s).	4. Develop handout to review task(s).
5. Observe audio-visual presentation on the task.	5. Develop sample (practice) task(s).
6. Listen to lecture on the task.	6. Observe student performance of task.
	7. Develop comprehensive test materials.
	8. Give lecture on the task.

DUTY/TASK NUMBER CO-14

Tools and/or Equipment	Conditions
Computer system (actual or simulated) Computer technical manuals See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when a job control description has been interpreted correctly.

DUTY/TASK NUMBER CO-14

Post-Test

Goal Statement #1 - The student will demonstrate an ability to interpret technical descriptions of Job Control statements.

Performance Objective #1 - Given a computer system and Job Control technical manuals the student will: (a) select the correct manual(s); (b) locate the description(s) for a specific job; and (c) interpret the description(s) as presented by the technical manual(s). Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 15

Duty Performing Activities Related to Computer Operations

Task Compare computer produced output to a job description sample using a knowledge of computer mediate output to verify the accuracy of a computer run.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the sample output in the run manual for the specific job -	____	____
2. Compared the output by checking the computer output with the sample output as to completeness and formality -	____	____
3. Wrote or logged the errors that may have occurred -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-15

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module. 2. Discuss task with teacher and/or other students. 3. Observe performance of task by teacher and/or other students. 4. Perform sample (practice) task(s). 5. Observe audio-visual presentation on the task. 6. Listen to lecture on the task.	1. Demonstrate sample (practice) task(s). 2. Develop unit/module to demonstrate task(s). 3. Develop audio-visual presentation. 4. Develop handout to review task(s). 5. Develop sample (practice) task(s). 6. Observe student performance of task. 7. Develop comprehensive test materials. 8. Give lecture on the task.

DUTY/TASK NUMBER CO-15

Tools and/or Equipment	Conditions
Computer produced output (actual or simulated) Run manual Sample output See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when the accuracy of the computer run has been checked and all errors noted.

DUTY/TASK NUMBER CO-15

Post-Test

Goal Statement #1 - The student will demonstrate an ability to analyze computer output and determine its accuracy

Performance Objective #1 - Given a computer output and a comparison standard, the student will analyze the computer output and determine its accuracy. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 16

Duty

Performing Activities Related to Computer Operations

Task

Write information in a log using a knowledge of computer operations to record information about completed jobs.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Observed computer output documents displays upon the console or other job status indicators -		
2. Interpreted the status of jobs being run on the computer -		
3. Recorded the information about each completed job in a run log as specified by the specific firm -		

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-16

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-16

Tools and/or Equipment	Conditions
Job completion log List of jobs to be completed See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when the completed jobs have been recorded in a log according to a procedure used by the specific firm.

DUTY/TASK NUMBER CO-16

Post-Test

Goal Statement #1 - The student will demonstrate an ability to maintain a "completed job" log.

Performance Objective #1 - Given a job completion log and a list of completed jobs the student will enter the information necessary to maintain a job completion log. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 17

Duty Performing Activities Related to Computer Operations

Task Analyze machine generated output using a knowledge of computer operations to identify the cause of processing errors.

Pre-Test (Same as Achievement Indicators)

The learner: Yes No

1. Observed lights, console messages or other computer indicators that indicate an error has occurred in processing - ____ ____
2. Read a reference manual that described the error message produced by the computer system to identify the cause of the error - ____ ____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-17

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module. 2. Discuss task with teacher and/or other students. 3. Observe performance of task by teacher and/or other students. 4. Perform sample (practice) task(s). 5. Observe audio-visual presentation on the task. 6. Listen to lecture on the task.	1. Demonstrate sample (practice) task(s). 2. Develop unit/module to demonstrate task(s). 3. Develop audio-visual presentation. 4. Develop handout to review task(s). 5. Develop sample (practice) task(s). 6. Observe student performance of task. 7. Develop comprehensive test materials. 8. Give lecture on the task.

DUTY/TASK NUMBER CO-17

Tools and/or Equipment	Conditions
Computer generated output containing errors (actual or simulated) Run manual Sample output See "Supplemental Tool and Eouipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when an error condition has been classified as to its cause.

DUTY/TASK NUMBER CO-17

Post-Test

Goal Statement #1 - The student will demonstrate an ability to analyze computer output to determine the cause of processing errors.

Performance Objective #1 - Given a computer output containing errors, a run manual, and an output standard the student will: (a) analyze the output; (b) determine the error(s); and (c) identify the cause of the error(s). Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 18

Duty Performing Activities Related to Computer Operations

Task Manipulate switches and keys on a computer console using a knowledge of a specific operating system to restart a program execution in which an abnormal halt has occurred.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Read a console display message documenting a program halt -	____	____
2. Determined the cause of the halt by referenced a run manual and/or a technical manual describing messages -	____	____
3. Selected the entires in an operations manual necessary to restart the program -	____	____
4. Performed the procedure to restart the program -	____	____

References & Resources

See "Bibliography" at the end of the "Computer Operations" section.

DUTY/TASK NUMBER CO-18

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module. 2. Discuss task with teacher and/or other students. 3. Observe performance of task by teacher and/or other students. 4. Perform sample (practice) task(s). 5. Observe audio-visual presentation on the task. 6. Listen to lecture on the task.	1. Demonstrate sample (practice) task(s). 2. Develop unit/module to demonstrate task(s). 3. Develop audio-visual presentation. 4. Develop handout to review task(s). 5. Develop sample (practice) task(s). 6. Observe student performance of task. 7. Develop comprehensive test materials. 8. Give lecture on the task.

DUTY/TASK NUMBER CO-18

Tools and/or Equipment	Conditions
Computer system (actual hardware must be provided) Run manual See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when a program has been restarted according to the operations manual.

DUTY/TASK NUMBER CO-18

Post-Test

Goal Statement #1 - The student will demonstrate an ability to restart a program in which an abnormal halt has occurred.

Performance Objective #1 - Given a computer system, job manual, and an abnormal halt in a program the student will: (a) identify the halt (b) determine restart procedure; and (c) restart the program. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 19

Duty

Performing Activities Related to Computer Operations

Task

Manipulate levers, keys, and switches on media devices using a knowledge of the specific devices to adjust operating performance of the device.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the descriptions of the proper adjustments for the specific device from its operations manual -	____	____
2. Set the adjustments for the proper performance of the device using such adjustment guides as printing positions and tension belts -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-19

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.	1. Demonstrate sample (practice) task(s).
2. Discuss task with teacher and/or other students.	2. Develop unit/module to demonstrate task(s).
3. Observe performance of task by teacher and/or other students.	3. Develop audio-visual presentation.
4. Perform sample (practice) task(s).	4. Develop handout to review task(s).
5. Observe audio-visual presentation on the task.	5. Develop sample (practice) task(s).
6. LIsten to lecture on the task.	6. Observe student performance of task.
	7. Develop comprehensive test materials.
	8. Give lecture on the task.

DUTY/TASK NUMBER CO-19

Tools and/or Equipment	Conditions
Computer system (actual hardware must be provided) Media devices Computer technical manuals Media device technical manuals See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when the device is adjusted correctly according to its operations manual.

DUTY/TASK NUMBER C0-19

Post-Test

Goal Statement #1 - The student will demonstrate an ability to adjust the operating performance of a computer output device.

Performance Objective #1 - Given a computer system, an output device operating inefficiently, computer technical manuals, and device technical manuals the student will: (a) determine the inefficiency and (b) manipulate the proper switches, keys and levers to correct the inefficiency. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 20

Duty Performing Activities Related to Computer Operations

Task Write information on labels using a knowledge of cataloging descriptions to identify specific media as to the data they contain.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Properly recorded on the label the program identification of the program which created the data -	___	___
2. Properly recorded on the label the date the data was created -	___	___
3. Properly recorded on the label the date the data validity will expire -	___	___
4. Properly recorded on the label the type of data recorded on the media -	___	___
5. Properly placed the label on the media container -	___	___

References & Resources

Textbooks, technical manuals, teacher developed materials

DUTY/TASK NUMBER CO 20

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e. text, computer technical manuals, media technical manuals, teacher prepared unit/module	1. Demonstrate sample (practice) task(s)
2. Discuss task with teacher and/or other students	2. Develop unit/module to demonstrate task(s)
3. Observe performance of task by teacher and/or other students	3. Develop audio-visual presentation
4. Perform sample (practice) task(s)	4. Develop handout to review task(s)
5. Observe audio-visual presentation on the task	5. Develop sample (practice) task(s)
6. Listen to lecture on the task	6. Observe student performance of task
	7. Develop comprehensive test materials
	8. Give lecture on the task

DUTY/TASK NUMBER CO 20

Tools and/or Equipment	Conditions
Media label (actual or simulated) Information needed to complete a media label Media container (actual or simulated)	After instruction and practice, the student will perform this task in the classroom/lab or at a data processing installation

Criteria Competence in the task will be recognize when the achievement indicators are performed successfuly according to the supervisor.

DUTY/TASK NUMBER CO 20

Post-Test

Goal Statement #1 - The student will demonstrate an ability to create a media library label.

Performance Objective # 1 - Given a media library label and the information necessary to complete the label the student will: (a) properly record the information on the label and (b) properly affix the label to the media container. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 21

Duty Performing Activities Related to Computer Operations

Task Manipulate levers, switches, and keys on media devices using a knowledge of the specific device to complete routine servicing normally performed by the operator.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Manipulated the switches or keys necessary to provide the proper level of electrical power for servicing -	____	____
2. Manipulated the switches, keys or levers to prepare the device for servicing -	____	____
3. Performed the service function as described in the operations manual for the specific device -	____	____
4. Manipulated switches, keys or levers to prepare the devices for regular operations -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-21

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-21

Tools and/or Equipment	Conditions
Computer system (actual hardware must be provided) Media devices Computer technical manuals Media device technical manuals See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when the service function is completed according to the procedure described in the operations manual.

DUTY/TASK NUMBER CO-21

Post-Test

Goal Statement #1 - The student will demonstrate an ability to perform normal operator service on an input/output device.

Performance Objective #1 - Given a computer system, input/output device, computer technical manuals, and device technical manuals the student will: (a) determine the necessary maintenance service; (b) manipulate the necessary switches, keys, and levers to prepare the device for maintenance; and (c) perform the necessary maintenance service. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 22

Duty

Performing Activities Related to Computer Operations

Task

Interpret device performance indicators using a knowledge of the specific device to identify a machine malfunction.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Observed lights, sounds on the device, and/or messages on the console unit to recognize an error condition on a device -	____	____
2. Located the description of the error condition in an operations manual -	____	____

References & Resources

See "Bibliopgraphy" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-22

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.	1. Demonstrate sample (practice) task(s).
2. Discuss task with teacher and/or other students.	2. Develop unit/module to demonstrate task(s).
3. Observe performance of task by teacher and/or other students.	3. Develop audio-visual presentation.
4. Perform sample (practice) task(s).	4. Develop handout to review task(s).
5. Observe audio-visual presentation on the task.	5. Develop sample (practice) task(s).
6. Listen to lecture on the task.	6. Observe student performance of task.
	7. Develop comprehensive test materials.
	8. Give lecture on the task.

DUTY/TASK NUMBER CO-22

Tools and/or Equipment	Conditions
Computer system (actual or simulated) Media devices Computer technical manuals Media device technical manuals Device malfunction See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when a machine malfunction has been identified as to its cause according to a description in an operations manual.

DUTY/TASK NUMBER CO-22

Post-Test

Goal Statement #1 - The student will demonstrate an ability to observe the performance indicators of a device and identify an malfunctions.

Performance Objective #1 - Given a computer system, input/output devices, computer technical manuals, input/output device technical manuals, and a device malfunction the student will: (a) observe the device in operation; (b) recognize a malfunction from the performance indicators of the device; and(c) identify the malfunction. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO Task No. 23

Duty

Performing Activities Related to Computer Operations

Task

Report verbally or in writing the malfunction of a device using a knowledge of the reporting procedure to notify service firms of the malfunction.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Determined the characteristics of the malfunction -	____	____
2. Reported the malfunction and its description to the appropriate persons using a procedure established by the firm -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-23

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-23

Tools and/or Equipment	Conditions
Computer or media device malfunction(s) (actual or simulated) Malfunction reporting system See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab or in a data processing installation

Criteria Competence in the task will be recognized when the malfunction has been reported according to a procedure established by the firm.

DUTY/TASK NUMBER CO-23

Post-Test

Goal Statement #1 - The student will demonstrate an ability to report a device malfunction to the appropriate person(s) or organization(s).

Performance Objective #1 - Given a computer system malfunction and a malfunction reporting system the student will: (a) make an oral report and (b) make a written report. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 24

Duty Performing Activities Related to Computer Operations

Task Analyze operating instructions using a knowledge of back-up and restorations procedures to identify files that need back-up.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the operating instructions for locating files that need back-up/restoration -	____	____
2. Read the operating instructions to locate files that need back-up/restoration -	____	____

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-24

Student Learning Activities	Teacher Activities
1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.	1. Demonstrate sample (practice) task(s).
2. Discuss task with teacher and/or other students.	2. Develop unit/module to demonstrate task(s).
3. Observe performance of task by teacher and/or other students.	3. Develop audio-visual presentation.
4. Perform sample (practice) task(s).	4. Develop handout to review task(s).
5. Observe audio-visual presentation on the task.	5. Develop sample (practice) task(s).
6. Listen to lecture on the task.	6. Observe student performance of task.
	7. Develop comprehensive test materials.
	8. Give lecture on the task.

DUTY/TASK NUMBER CO-24

Tools and/or Equipment	Conditions
File backup system List of files See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice, the student will perform this task in the classroom/lab

Criteria Competence in the task will be recognized when all files that need back-up and/or restorations have been identified.

DUTY/TASK NUMBER CO-24

Post-Test

Goal Statement #1 - The student will demonstrate an ability to identify files that require backup/restoration.

Performance Objective #1 - Given a file backup/restoration system and a list of files the student will: (a) identify the files that need backup and (b) identify the files that need restoration. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CO

Task No. 25

Duty Performing Activities Related to Computer Operations

Task Interpret system performance using a knowledge of system performance to identify system performance inefficiencies.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Observed the operating performance of a computer system -	___	___
2. Compared the performance with either past performances or with listed performance expectations -	___	___
3. Listed any job performance that did not meet stated standards -	___	___

References & Resources

See "Bibliography" at end of "Computer Operations" section.

DUTY/TASK NUMBER CO-25

Student Learning Activities

1. Read assigned materials, i.e., text, computer technical manuals, media technical manuals, teacher prepared unit/module.
2. Discuss task with teacher and/or other students.
3. Observe performance of task by teacher and/or other students.
4. Perform sample (practice) task(s).
5. Observe audio-visual presentation on the task.
6. Listen to lecture on the task.

Teacher Activities

1. Demonstrate sample (practice) task(s).
2. Develop unit/module to demonstrate task(s).
3. Develop audio-visual presentation.
4. Develop handout to review task(s).
5. Develop sample (practice) task(s).
6. Observe student performance of task.
7. Develop comprehensive test materials.
8. Give lecture on the task.

DUTY/TASK NUMBER CO-25

Tools and/or Equipment	Conditions
Computer system (actual hardware must be provided) List of jobs Performance efficiency standard See "Supplemental Tool and Equipment List" at end of section on "Computer Operations"	After instruction and practice the student will perform this task in the classroom/lab or at a data processing installation

Criteria Competence in the task will be recognized when a system performance inefficiency has been identified.

DUTY/TASK NUMBER CO-25

Post-Test

Goal Statement #1 - The student will demonstrate an ability to identify system inefficiencies.

Performance Objective #1 - Given a computer system operating inefficiently, a list of jobs, run manuals, and a performance efficiency standard the student will: (a) observe the system operating (b) compare the system performance to a standard; and (c) identify operating inefficiencies. Competence will be accepted when the student can perform the procedure as observed by the instructor/aide using test materials developed by the instructor.

Evaluation/Feedback

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SUPPLEMENTAL TOOL AND EQUIPMENT LIST

COMPUTER OPERATIONS

This is not intended to be a complete and final equipment list. It is a representative sampling of the hardware available.

Manufacturers

IBM
Burroughs
Data General
Hewlett Packard
Prime
Texas Instrument
Honeywell
Univac
N.C.R.

Input/Output Peripherals
Card Reader
Card Punch
Line Printer
Matrix Printer
Magnetic Tape
Magnetic Disk (rigid)
Magnetic Disk (floppy)
Cathode Ray Tube (CRT)
Paper Tape
Graph Printer

Curriculum Worksheet

Duty No. CP

Task No. 1

Duty Performing Activities Related to Computer Programming

Task Analyze a program request using a knowledge of programming techniques to prepare an estimate of the time involved in preparing and executing a computer program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Obtained a program request -	____	____
2. Analyzed the program request to determine the nature of data -	____	____
3. Estimated the programming hours using analysis to:		
a. Design files and records -	____	____
b. Design the program -	____	____
c. Design the data -	____	____
d. Construct files and records -	____	____
e. Code, compile and test the program -	____	____
f. Document the program -	____	____

References & Resources

See Bibliography Nos. 10, 13, 14 and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-1

Student Learning Activities	Teacher Activities
1. Students should receive and note the time and run limitations on each program.	1. Develop a guideline for programming assignments which list estimated time and number of runs for each program.
2. Students will realize after running a program the time necessary for program completion.	2. Develop appropriate program requests based on actual business applications; accounting cycle, payroll, inventory, etc.
3. Having previous programming experience the learner should now be able to analyze a new program request and determine the time necessary to complete the program.	3. Lead class discussion on programming and the elements involved in preparing and executing a program.
4. Participate in class discussion about the elements of programming.	4. Describe to the class the step by step procedure for performing the task.
5. Students can, in writing, describe the nature of the data.	5. Perform a sample estimate for a class problem.
6. Students can perform steps 3A through 3F individually and record their elapsed time.	6. Observe students during performance of the task, noting any wide deviation.
7. Students can perform step 2 above for 5 programs of varing degree noting the differences in their time and the reasons for the difference.	7. Discuss deviations and reasons with the student.
8. Students can make an estimate, then perform the task and compare actual time with the estimate.	
9. Students can discuss reasons for any deviation from their estimate.	

DUTY/TASK NUMBER CP-1

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and Basic or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of work-stations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card.	After instruction and hands-on practice by the students, this activity should be graded based on the guidelines for program assignments.

Criteria Competence in the task will be recognized when the time estimation is performed as described by the guidelines established by the firm.

Post-Test

Goal Statement #1 - You will prepare an estimate of the time involved in preparing and executing a computer program.

Performance Objective #1 - Given a program request, you will estimate the programming hours necessary to: (a) design files and records; (b) design the program; (c) design the data; (d) construct files and records; (e) code, compile, and test the program; and (f) document the program. Performance will be accepted when the estimates are near the times established by actual completion of the program.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 2

Duty Performing Activities Related to Computer Programming

Task Analyze a program request containing specifications using a knowledge of data processing equipment and techniques to prepare program documentation that describe the parameters necessary to produce the desired output.

Pre-Test (Same as Achievement Indicators)

The learner: Yes No

1. Analyze the program request to determine description of input/output data and major processing parameters - ____ ____
2. Prepared a written general description of the input files, output files and major processing parameters and/or logic - ____ ____

References & Resources

See Bibiography Nos. 1, 8, 9, 10, 11, 12, 13, 14, and 19 at end of section

DUTY/TASK NUMBER CP-2

Student Learning Activities

1. Participate in a class discussion on how to analyze a program request to determine description of input/output data and major processing parameters.
2. Analyze a program request.
3. Prepare a written general description of input/output files and major processing parameters and/or logic.
4. Read assignments and handouts to understand how to accomplish the task.
5. Use a flowcharting template and flowcharting instructions to correctly flowchart a program request.
6. Student can describe the files necessary to produce the desired output.

Teacher Activities

1. Take the class through a simple program request showing them how to write a general description of the input and output files and major processing parameters and/or logic.
2. Assign readings and/or handouts to accomplish this task.
3. Assign readings and/or handouts to teach system flowcharting.
4. Provide flowcharting templates.
5. Describe the input files.
6. Describe the output files.
7. Hand out a sample narrative to the class.

DUTY/TASK NUMBER CP-2

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and Basic or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card.	The activity of writing general descriptions for input/output files and major processing parameters could be accomplished most any place. These are the kind of activities students should be involved in when they can't get on a workstation.

Criteria Competence in the task will be recognized when the program documentation describes the data and logic necessary to prepare file specifications, data characteristics and a logic guide for the program.

DUTY/TASK NUMBER CP-2

Post-Test

Goal Statement #1 - You will produce documentation that describes the parameters necessary to produce a desired output.

Performance Objective #1 - Given a program request, you will demonstrate the following tasks: (a) analyze the input/output request and (b) prepare a written description of the input, output, and required processing. Performance will be accepted when documentation describes the data and logic completely, enabling the file specifications to be written without error.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 3

Duty Performing Activities Related to Computer Programming

Task Analyze program specifications using a knowledge of file organizational types to prepare file specifications to be described in the program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Analyzed the program specifications to determine:		
a. Whether the input data was an existing file(s) or if a file(s) would have to be created -		
b. The organization of the input file(s) and the method of access -		
c. Whether output data would be written to an existing file(s) or if a file(s) would have to be created -		
d. The organization of the output file(s) and the method of access -		
2. Listed the characteristics of all files to be used in the program -		

References & Resources

See Bibliography Nos. 1. 8, 10, 11, 12, 13, 14, 15, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-3

Student Learning Activities	Teacher Activities
1. Read assignments and do questions about input files.	1. Assign readings about input files.
2. Read and understand handouts about input file description, creation, and access.	2. Provide handouts with example of input file descriptions. How a data file is created, how it is put on the system, and how it is accessed.
3. Read assignment and do questions about output files.	3. Assign readings about output files.
4. Read and understand handouts about output file description, creation, and access.	4. Provide handouts with examples of output file descriptions. How an output is created, how it is assigned to the system, and how it is accessed.
5. Participate in a group discussion about files.	5. Lead a discussion on the concepts of files and their types and characteristics.
6. Student can complete the file description pages for an RPG-II program.	6. Complete the file description entries on a sample overhead projection page while instructing the students to complete the same page by following along.
OR	
7. Student can code the file description portion of a Cobol File section.	
OR	
8. Student can describe the files for other programming languages according to the requirements of the language.	

DUTY/TASK NUMBER CP-3

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and Basic or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card. Overhead projector. Transparency markers. Pre-printed sample coding sheets prepared for distribution. Overhead transparencies made from coding sheet masters.	After instructions and class discussion this activity could be accomplished most any place without equipment.

Criteria Competence in the task will be recognized when all files in the program meet the needs of the program and conform to methods used in the specific firm.

DUTY/TASK NUMBER CP-3

Post-Test

Goal Statement #1 - You will prepare file specifications for a given program.

Performance Objective #1 - Using a knowledge of file organization types to prepare file specifications to determine: (a) whether the input data was an existing file(s) or if a file(s) would have to be created; (b) the organization of the input file(s) and the method of access; (c) whether output data would be written to an existing file(s) or if a file(s) would have to be created; and (d) the organization of the output file(s) and the method of access. This performance will be accomplished by the learner making the right decision on the above listings as determined by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 4

Duty Performing Activities Related to Computer Programming

Task

Analyze program specifications using a knowledge of data characteristics to identify specific data characteristics to be described in the program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Analyzed the input/output file specifications to determine:		
a. Number of record types -	____	____
b. Content, size, class and location of each field within each record -	____	____
c. Coded fields (if any) -	____	____

References & Resources

See Bibliography Nos. 1, 8, 10, 11, 12, 13, 14, 15, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-4

Student Learning Activities	Teacher Activities
1. Read assignments on card layout.	1. Provide handouts and readings about multiple card and record layouts to include coding.
2. Layout the fields of an input record from test data.	2. Provide a program request with test data.
3. Create input file description.	3. Demonstrate card layout, printer spacing chart layout, output record layout.
4. Create an output file description.	4. Display, on an overhead projector, various methods of record description and explain how to read them.
5. Create printer spacing chart (diagram of printed output).	5. Distribute handout sheets of various record layout types. Ask student to answer questions regarding content, size, location, etc.
6. Layout output records.	
7. Student can construct record layouts from written descriptions.	
8. Student can, in writing, describe the various attributes of the record.	

DUTY/TASK NUMBER CP-4

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and Basic or access to a time-sharing computer. Cathode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card. Overhead projector. Transparencies showing record layouts.	This is an individualized and/or group activity which could be accomplished in or out of the classroom with no equipment needed. An appropriate supply of card layouts and printer spacing charts are necessary.

Criteria Competence in the task will be recognized when all data has been described in its proper relationship to files, records and fields according to the program request.

DUTY/TASK NUMBER CP-4

Post-Test

Goal Statement #1 - You will identify specific data characteristics to be described in a program.

Performance Objective #1 - Using a knowledge of data characteristics the learner will analyze the input/output file specifications to determine: (a) number of record types; (b) content, size, class and location of each field within each record; and (c) coded fields (if any), This performance will be accomplished by the learner making the right decision on the above listings as determined by the instructor.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 5

Duty Performing Activities Related to Computer Programming

Task

Analyze program specifications using a knowledge of programming techniques to construct a guide to code the logical steps of a program.

Pre-Test (Same as Achievement Indicators)

The learner: Yes No

1. Analyze the specifications to determine the organization of the logic necessary to produce the desired cutput - ____ ____
2. Prepared a guide to the logical structure of the program by constructing a design document accepted by the industry - ____ ____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, 15, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-5

Student Learning Activities	Teacher Activities
1. Student can read the text material. 2. Student can diagram (flowchart) problems. 3. Student can write the logic steps in an orderly fashion (IOP chart). 4. Students can exchange logic guides and check for each others errors. 5. Participate in a class discussion about program flowcharting. 6. Write a detailed flowchart. 7. Determine the necessary calculations or processing steps in a program. 8. Determine the logical steps in a program.	1. Explain uses of flowcharting symbols (if used). 2. Explain a situation requiring a program to student. 3. Lead a class discussion about detailed program flowcharting. 4. Provide sample flowchart. 5. Provide flowcharting templates. 6. Demonstrate the programming cycle. 7. Place solution to the problem on chalkboard or overhead projector.

DUTY/TASK NUMBER CP-5

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and Basic or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card. Flowcharting template. Overhead projector. Chalkboard.	This is an individualized and/or group activity which could be accomplished in or out of the classroom with no equipment needed. An appropriate supply card layouts and printer spacing charts are necessary. An appropriate supply of flowcharting templates and coding sheets are necessary.

Criteria Competence in the task will be recognized when the design of the logic describes the processing needed to produce the output according to techniques used within the industry.

DUTY/TASK NUMBER CP-5

Post-Test

Goal Statement #1 - You will construct a guide to code the logic steps of the program.

Performance Objective #1 - Given a problem statement and the necessary tools, the student will construct a guide to code the logic of the problem. Performance will be accepted when the guide correctly describes the logic necessary to solve the problem and is completed according to techniques used within the industry.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 6

Duty Performing Activities Related to Computer Programming

Task Analyze written descriptions in technical manuals using a knowledge of a specific language to interpret descriptions of language statements and operating characteristics of a specific computer system.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the proper manual -		
2. Located the reference description that described the term or condition needing clarification -		
3. Indicated verbally or in writing how the term or condition should be interpreted for a specific situation -		

References & Resources

See Bibliography Nos. 10, 11, 12, 13, and 14 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-6

Student Learning Activities	Teacher Activities
1. Locate and use reference manuals. 2. Complete assignments using reference manuals for error recovery. 3. Use manuals as an intrigical part of day to day operations. 4. Student can find the proper language statement in a reference library and explain the meaning in their own words. 5. Student can explain the abbreviations used in the technical reference manual.	1. Explain the indexing method used in the reference library. 2. Explain how to use the table of contents and the index of a technical reference manual. 3. Explain the abbreviations and symbols used in the technical reference manual. 4. Provide student with a list of language statements to locate in the reference library and explain in his/her own words. 5. Develop a reference library. 6. Demonstrate the use of reference manuals. 7. Demonstrate how to update reference manuals.

DUTY/TASK NUMBER CP-6

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and Basic or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk) key-to-card. Technical reference manual library.	Reference manual will be used in the classroom on a day to day basis. All equipment interrupts and programming will first be referred to in the system manuals. After explanation of library use, indexing, and symbols/abbreviation usage, this activity should take place in the classroom.

Criteria Competence in the task will be recognized when the term or condition has been correctly interpreted according to language specifications.

DUTY/TASK NUMBER CP-6

Post-Test

Goal Statement #1 - You will interpret language statements and operating characteristics for a specific language.

Performance Objective #1 - Given technical manuals the learner will correct any programming problems by: (1) selecting the proper manual; (2) locating the reference description that described the term or condition needing clarification; and (3) indicating verbally or in writing how the term or condition should be interpreted for a specific situation. Performance will be accepted when the statement or condition has been correctly interpreted according to the language specifications.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP Task No. 7

Duty Performing Activities Related to Computer Programming

Task Write language statements using a knowledge of the specific language and program documents to produce a source program coded in a specific language.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected coding sheets for the specific language -	____	____
2. Wrote specific language instructions to describe the problem using program documents -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-7

Student Learning Activities	Teacher Activities
1. Student can code the logic to solve the problem using a knowledge of a specific language. 2. If more than one language is known, student can choose which language is best. 3. Select and use appropriate coding sheets. 4. Correctly fill out coding sheets in two languages RPG, COBOL, or BASIC. 5. Participate in class discussion and demonstration on coding sheets.	1. Provide program request. 2. Provide instructions in coding. 3. Provide sheets for coding. 4. Demonstrate the proper use of coding sheets using overhead projector. 5. Provide sample programs using coding sheets. 6. Assign readings on the coding of RPG, COBOL, or BASIC. 7. Present student with any knowledge needed to handle specific area of the problem. 8. Present student with necessary information about the problem, such as: a. input/output record layouts b. problem definition c. completion deadlines

DUTY/TASK NUMBER CP-8

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to diskette (floppy disk), key-to-card. Necessary coding sheets for the specific language being used. Pre-printed statement concerning: a. record layouts b. problem definition	The coding of specification sheets to create a source document will first need to be done in a controlled classroom were demonstrations and discussion can be accomplished. Once the students competence of writing source programs on his/her own this task could be accomplished in or outside of school. To expedite programming and provide homework the writing of source programs outside should be encouraged.

Criteria Competence in the task will be recognized when the problem or job has been described correctly according to the program specifications and techniques established by the firm.

DUTY/TASK NUMBER CP-7

Post-Test

Goal Statement #1 - You will write language statements to produce a source program.

Performance Objective #1 - Given a specific problem to solve, along with all necessary record layouts, and using a knowledge of a specific language, the student will write language statements to produce a source program coded in a specific language. Performance will be accepted when the source code has been correctly produced according to the program specifications and techniques by the firm.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 8

Duty Performing Activities Related to Computer Programming

Task Review a source program using a knowledge of the specific language to identify coding errors within the source program prior to compilation.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Reviewed the data descriptions in the source program to assure that all data was described correctly -	____	____
2. Reviewed the logical structure of the program to assure that all logic was described correctly -	____	____
3. Reviewed statements to assure that all were written as required by the language using a knowledge of the source language and a technical manual for the language -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, and 14 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-8

Student Learning Activities	Teacher Activities
1. Review coding sheets before entering onto system.	1. Provide sample programs of completed coding sheets.
2. Make corrections and revisions on coding sheets.	2. Assign reading on coding sheets for at least two of the following languages: RPG, COBOL, or BASIC.
3. Participate in group discussion and use checklist for proofreading coding sheets.	3. Lead discussion and provide handout on check points for proofreading coding sheets.
4. Student can manually process a record through the program to check the logic of the program.	4. Describe the procedure for bench-testing a program.
5. Students can exchange programs and check each others coding and logic.	5. Provide a handout sheet of common errors.

DUTY/TASK NUMBER CP-8

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card.	The reviewing and comparing of statements on coding sheets to identify errors before compiling can be accomplished in or outside of the classroom. Students should have appropriate examples to follow and instructional materials which explain new applications. After program has been written but before compilation, this activity should take place in the classroom.

Criteria Competence in the task will be recognized when the source statements are written correctly according to the program specifications and specific language requirements.

DUTY/TASK NUMBER CP-8

Post-Test

Goal Statement #1 - You will review a source program prior to compilation to identify coding errors.

Performance Objective #1 - Given a source program prior to compilation, and using a knowledge of a specific language, the student will review the program and identify any coding errors. Performance will be accepted when all errors in the source coding have been identified.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP
Task No. 9

Duty Performing Activities Related to Computer Programming

Task Key source statements into a device using a knowledge of the operating procedures of the device to produce computer readable source statements.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Activated device by manipulating the correct keys, switches, or levers -	____	____
2. Depressed keys to enter each source statement into the device to produce the statement on a media -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, and 14 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-9

Student Learning Activities	Teacher Activities
1. Participate in an orientation about the entry level device.	1. Provide handouts which illustrates the keys and functions necessary to enter a program.
2. Learn the purpose of function command keys.	2. Demonstrate how to enter source program on the system.
3. Enter source program into system.	3. Demonstrate the system utility that may be available for source entry.
4. Student can operate the device to produce computer readable source statements.	4. Prepare a handout sheet listing the steps for proper operation and safety precautions for the device.
5. Students can teach other students how to operate the device.	5. Prepare a video-tape presentation of the proper operation of the device.

DUTY/TASK NUMBER CP-9

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card.	The keying of source statements should be done directly on the system via CRT's. The system could be in house or time shared. Keypunch, tape, or diskette could also be used but CRT's should be the primary source of data and program entry.

Criteria Competence in the task will be recognized when source statements are produced on a media according to procedures for a specific device.

DUTY/TASK NUMBER CP-9

Post-Test

Goal Statement #1 - You will key source statements into a device to produce computer readable source statements.

Performance Objective #1 - Given a list of source statements and a properly functioning key entry device, the student will key the source statements into the device to produce computer readable source statements. Performance will be accepted when correct source statements are produced on a media according to procedures for a specific device.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 10

Duty

Performing Activities Related to Computer Programming

Task

Write job control statements using a knowledge of job control language and the specific operating systems to produce the instructions necessary to compile a source program into an object program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected a coding sheeting that could be used for job control statements -	____	____
2. Selected the job control language reference manual for the specific operating system -	____	____
3. Selected the options to compile a program within the job control statements used by the specific firm -	____	____
4. Wrote the statements to produce an object program from a source program using the reference manual as a guide -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-10

Student Learning Activities	Teacher Activities
1. Read assignments in reference manuals and handouts about compiling a program.	1. Provide handouts on the procedures necessary to compile a program.
2. Use the utility, screen or display to compile a program.	2. Identify which reference materials are available.
3. Understand what compiling does and what a compiled program is.	3. Demonstrate system utilities that are available to assist in compiling a program.
4. Student can write job control language statements to produce instructions to compile a source program into an object program.	4. Explain what a compiled program is.
5. Student can exchange job control language statements with other students to check each others work for accuracy.	5. Show examples of compiled programs.
6. Students can execute job control language statements to produce a a compilation.	

DUTY/TASK NUMBER CP-10

Tools and/or Equipment	Conditions
CPU capable of executing job control language statements and containing a specific language compiler, i.e., IBM - Sys 3, 32, 34; IBM - 370; and Honeywell 200 Source program on computer readable media.	The writing of job control statement should be done on paper with the use of reference manuals or via CRT using system utilities which provide options screens.

Criteria Competence in the task will be recognized when a source program has been compiled and either a source program error listing or object program is produced.

DUTY/TASK NUMBER CP-10

Post-Test

Goal Statement #1 - You will write job control language statements to compile a source program into an object program.

Performance Objective #1 - Given a file of computer readable source statements, and a CPU capable of compilation of specific language statements, you will write the job control language statements to produce a compilation of the source statements into object statements. Performance will be accepted when the source program has been compiled and either an error listing or an object program has been produced.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 11

Duty Performing Activities Related to Computer Programming

Task Analyze error notation produced by a computer using a knowledge of the specific language to identify syntax errors in the source program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Matched each error in the error listing with the source statement -		
2. Noted the nature of the error in the source statement according to the specific language structure -		

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-11

Student Learning Activities	Teacher Activities
1. Know when, where, and how to get program diagnostics.	1. Describe the common errors encountered in similar programs and ennumerate the possible reasons for the errors.
2. Participate in a group discussion on debugging programs.	2. Help individual students find particularily difficult errors.
3. Be able to debug a program without assistance.	3. Demonstrate how to debug a program.
4. Correctly use available debugging tools or devices.	4. Provide a handout of a program for debugging.
	5. Provide and demonstrate whatever debugging tools and devices that are available.

DUTY/TASK NUMBER CP-11

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card. Debug templates.	A classroom situation should be available that allows students the opportunity to identify and correct syntas errors. Reference manuals and debugging templates should be available.

Criteria Competence in the task will be recognized when all errors have been identified as to type.

Post-Test

Goal Statement #1 - You will identify syntax errors in the source program.

Performance Objective #1 - Given a source listing and an error listing produced by the compiler, you will identify the syntax errors in the source listing. Performance will be accepted when all errors have been identified.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 12

Duty Performing Activities Related to Computer Programming

Task Write source statements using a knowledge of the specific language and an error notation listing to produce corrected statements in a source program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Located each error on the computer produced source listing -	____	____
2. Analyzed the error as to its cause -	____	____
3. Noted on the listing the coding necessary to correct the error -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-12

Student Learning Activities	Teacher Activities
1. Locate, identify, and correct error in source program.	1. Demonstrate proper method of correcting a program.
2. Compile corrected program.	2. Demonstrate how to update a program including: deleting, adding, changing, or rearranging lines in a program.
	3. Ensure that the student understands why the original statements were in error.

DUTY/TASK NUMBER ☐

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.	The correcting of compiled program could be accomplished in or outside of school, individually or a small group efforts. Unless there is an adequate number of data entry stations the correcting of a compiled program should be done away from the data station. Written corrections should first be done. Once all errors are all located and corrections made the student should correct the program on the system and recompile.

6

Criteria Competence in the task will be recognized when a source program listing is produced with no errors.

DUTY/TASK NUMBER CP-12

Post-Test

Goal Statement #1 - You will write corrected source code to eliminate syntax errors in your program.

Performance Objective #1 - Given a program source listings and an error listing with the errors identified, the student will write the source code correctly to eliminate all errors. Performance will be accepted when the source code produces a compilation which is errorless.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 13

Duty
Performing Activities Related to Computer Programming

Task
Write job control statements using a knowledge of job control language and the specific operating system to produce the instructions necessary to execute an object program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected a coding sheet that was used for job control statements -		
2. Selected the job control language reference manual -		
3. Chose the options necessary to execute a program -		
4. Wrote the statements necessary to execute an object program using the reference manual as a guide -		

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-13

Student Learning Activities	Teacher Activities
1. Read assigned reference materials on job control statements.	1. Explain job control language statements.
2. Student can write job control language statements to produce instructions to execute an object program.	2. Provide handouts and use transparencies to illustrate the use of job control statements.
3. Student can exchange job control language statements with other students to check each others work for accuracy.	3. Demonstrate how to enter and execute job control statements.
4. Student can execute job control language statements to cause the computer to execute the object program.	4. Demonstrate the use of reference manuals and options available in written procedures.

DUTY/TASK NUMBER CP-13

Tools and/or Equipment

Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer.

Cathrode Ray Tubes (CRT) devices for input and output.

Printer -- on-site.

An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time.

Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.

Conditions

The student with the use of handouts and reference manuals could write procedures to execute an object program in or outside of school.

Criteria Competence in the task will be recognized when an execution has been performed using the specific object program.

DUTY/TASK NUMBER CP-13

Post-Test

Goal Statement #1 - You will write job control language statements to execute an object program.

Performance Objective #1 - Given an object program and a CPU capable of executing job control statements the students will write the job control statement to execute the object program. Performance will be accepted when the job control statements cause the proper execution of the object program.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 14

Duty Performing Activities Related to Computer Programming

Task Analyze output data produced by an object program using a knowledge of the test data to identify logical errors in the program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Compared output from a test run to the expected output -		
2. Identified all logical errors that exist -		
3. Marked all coded statements in the source program that were in error using a source program listing -		

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-14

Student Learning Activities	Teacher Activities
1. Participate in a class discussion on the proofreading on printouts.	1. Demonstrate methods of checking for accuracy.
2. Know how to obtain a copy of their printout.	2. List common sources of error.
3. Correctly identify spacing, punctuation, spelling, and/or calculate error on a printout.	3. Provide instruction in the construction of test data.
4. Student can provide his/her own test data.	4. Provide the test data.
5. Student can calculate the expected results of a program before execution.	5. Provide ecamples of printout to illustrate horizontal and vertical spaces.
6. Student can use supplied data to check output for accuracy.	6. Lead a discussion on what to look for when proofreading a printout.

DUTY/TASK NUMBER CP-14

Tools and/or Equipment

Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer.

Cathrode Ray Tubes (CRT) devices for input and output.

Printer -- on-site.

An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time.

Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.

Calculator (if necessary)

Felt tip marker of a contrasting color.

Conditions

Laboratory time should be provided in block-time programs to allow students the opportunity to retrieve, proofread, and correct their printouts.

After execution of a program which produces erroneous results, this activity should take place in the classroom lab.

Criteria Competence in the will be recognized when all logical errors have been identified and noted as to the changes that must be made to correct the errors.

Post-Test

Goal Statement #1 - You will analyze output data to identify logical errors.

Performance Objective #1 - Given a source listing of the program and an output listing containing erroneous data, the student will identify the logical errors in the source listing. Performance will be accepted when all errors have been identified and corrections noted on the source listing.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 15

Duty Performing Activities Related to Computer Programming

Task Write source statements using a knowledge of the specific language and output test data to produce a corrected logical sequence in a source program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Selected the coding sheets for the specific language -	____	____
2. Wrote the statements to correct the logical errors using a source listing -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-15

Student Learning Activities	Teacher Activities
1. Students can write the language statements in corrected form, to eliminate the errors.	1. Provide handouts to cover the procedure for correcting a printout.
2. Using system input device correct errors in the source program.	2. Demonstrate techniques for horizontal and vertical centering.
3. Recompile and execute the job control statements.	3. Ensure that the student understands why the original statements were in error.

DUTY/TASK NUMBER CP-15

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card. Spacing rulers.	In a laboratory situation the students will retrieve their printout, proofread for logical errors and correct these errors. Students should use vertical and horizontal rules discussed in the class. Printers spacing charts should be provided for student use.

Criteria Competence in the task will be recognized when the object program is error free and executes as described in the program specifications.

DUTY/TASK NUMBER CP-15

Post-Test

Goal Statement #1 - You will write corrected source code to eliminate logical errors in your source program.

Performance Objective #1 - Given a program source listing with logical errors identified, and an output listing with erroneous data, the student will write the source code correctly to eliminate all errors. Performance will be accepted when the object program produces an output listing with correct data.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 16

Duty Performing Activities Related to Computer Programming

Task Write user instructions using a knowledge of the program logic and specifications to produce a user's manual.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Using the program specifications, prepared a list of instructions for the user as to how the source data must be prepared -	____	____
2. Wrote a schedule of when data must be prepared for the specific run using a computer operations schedule -	____	____
3. Wrote instructions and explanations of what the outputs consist of, how they were prepared, and their intended use using program specifications and sample output -	____	____

References & Resources

See Bibliography

DUTY/TASK NUMBER CP-16

Student Learning Activities	Teacher Activities
1. Participate in documentation orientation.	1. Assign readings on documentation.
2. Use programming instructions and documentation to explain the what, why, where, and how of a program.	2. Demonstrate how to document within a program.
3. Prepare a run manual which explains how and when certain programs are run and what data is needed.	3. Demonstrate what program instructions are necessary.
4. Student can view sample user documentation from local data processing departments.	4. Demonstrate the use of a run manual.
5. Student writes user documentation.	5. Pass out samples of local user documentation.
6. Students can exchange user documentation for different programs to check for clarity and readability.	6. Make overhead transparencies of local use documentation.
	7. Discuss ways to make the documentation more readable.
	8. Talk about clarity and conciseness.

DUTY/TASK NUMBER CP-16

Tools and/or Equipment

Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer.

Cathrode Ray Tubes (CRT) devices for input and output.

Printer -- on-site.

An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time.

Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.

Sample user documentation from local data processing departments.

Overhead project (if used).

Conditions

Sample documents within a program and a sample run manual should be demonstrated and made available for student reference in the computer laboratory. All student programs should be completely documented. Students should also keep a run manual of all their programs.

After student has analyzed the program specifications, computer run schedule, and sample output, this activity should take place in the classroom.

Criteria Competence in the task will be recognized when the user can correctly prepare source data for input and interpret output from the program.

DUTY/TASK NUMBER CP-16

Post-Test

Goal Statement #1 - You will prepare user instructions to include input forms, time schedules, and output uses.

Performance Objective #1 - Given knowledge of program logic and specifications to produce a users manual the student will: (1) prepare the program specifications prepare a list of instructions for the user as to how the source data must be prepared; (2) write a schedule of when data must be prepared for the specific run using a computer operations schedule; and (3) write instructions and explanations of what the outputs consist of, how they were prepared, and their intended use using program specifications and sample output. Performance will be accepted when the user can understand and correctly use the instructions to prepare input and interpret output.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 17

Duty Performing Activities Related to Computer Programming

Task Analyze output of a test run with a user using a knowledge of the program requirements to obtain approval that the program is producing the desired results.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Assembled the documents including the program specifications and a sample of a test run -	____	____
2. Met with the user and compared the output of the test run with the desired output as decribed by the program specifications -	____	____
3. Obtained approval or noted any changes in the output requested by the user -	____	____

References & Resources

See Bibliography

DUTY/TASK NUMBER CP-17

Student Learning Activities	Teacher Activities
1. Participate in a group discussion on reporting back to the user for approval of program.	1. Assign readings on report preparation for supervisor.
2. Correctly prepare written and/or oral reports for program approval.	2. Lead a discussion on reporting back to the user for further clarifications and approval of test runs.
3. Student can explain output to user and ask for confirmation that the output is correct.	3. Demonstrate the proper methods of oral and/or written report presenting.

DUTY/TASK NUMBER CP-17

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.	A group discussion and presentation should be made on the procedures for reporting back to the user for further clarification and approval of test runs. After object program has produced the desired output and student understands what the program specifications required, this activity should take place at the users office.

Criteria Competence in the task will be recognized when the user has either approved the sample output or noted changes to be made.

Post-Test

Goal Statement #1 - You will review output with the user to gain the users approval or note any changes.

Performance Objective #1 - Given the output of a test run the student will: (1) assemble the documents including the program specifications and a sample of a test run; (2) meet with the user and compare the output of the test run with the desired output as described by the program specifications; and (3) obtain approval or note any changes in the output requested by the user.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 18

Duty Performing Activities Related to Computer Programming

Task Collect program listings, test data, and other specified documents using a knowledge of documentation to produce documentation of the design, coding and operation of the program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Collected documents -	____	____
2. Prepared a folder of program documentation using the above documents -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, 15, 16, 18, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-18

Student Learning Activities	Teacher Activities
1. Student can collect any pertinent forms.	1. Display and discuss sample documentation folders with the class.
2. Student can re-do any forms that may have been rough-draft copies.	2. Lead a discussion on how to finalize a program.
3. Student can assemble the forms into proper order as prescribed by the instructor.	3. Demonstrate how to store, retrieve, and prompt the program for periodic use.
4. Participate in a discussion on finalizing a program.	4. Present methods of documenting and storing written backup of programs and procedures.
5. Know how to store, retrieve, or prompt the program for periodic use.	
6. Prepare complete documentation of programs and procedures for backup storage.	

DUTY/TASK NUMBER CP-18

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.	The computer laboratory should contain references and examples of documentation, notebooks, and run manuals. Materials should be made available for students to document all their programs, procedures and files. Program notebooks and run manuals should be kept by each student.

Criteria Competence in the task will be recognized when all documents specified by the specific firm are correct and included in the folder.

Post-Test

Goal Statement #1 - You will produce a documentation folder of the design, coding, and operation of the program.

Performance Objective #1 - Given the program specifications, all pertinent documents and a knowledge of documentation techniques, the student will prepare a documentation folder of the design, coding and operation of the program. Performance will be accepted when all documents required by the firm are in the proper sequence in a documentation folder.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 19

Duty Performing Activities Related to Computer Programming

Task Analyze program documentation using a knowledge of programming techniques to produce a list of coding changes to a computer program.

Pre-Test (Same as Achievement Indicators)

The learner: Yes No

1. Noted the changes needed in the original program using a program change request and program documentation - ____ ____
2. Marked the changes needed to implement the new input/output/logic request - ____ ____
3. Noted the corrections necessary in the source program on the source listing - ____ ____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, 15, 16, 18, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-19

Student Learning Activities	Teacher Activities
1. Understand the need for periodic program update.	1. Discuss with the class the need for periodic change or updates to programs.
2. Be able to retrieve and update old programs.	2. Handout examples of program change request.
3. Document new changes in program.	3. Discuss the procedures for periodic update.
4. Student can review the documentation folder.	
5. Student can review the requested changes.	
6. Student can note the changes on a source listing or a coding.	

DUTY/TASK NUMBER CP-19

Tools and/or Equipment	Conditions
Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.	In the computer laboratory once the student has completed a program the instructor should give him a program request. Having participated in group discussion on program changing and updating the student should alter the program, and documentation to reflect the changes requested.

Criteria Competence in the task will be recognized when the changes in the coding of the source program reflect the program change request.

DUTY/TASK NUMBER CP-19

Post-Test

Goal Statement #1 - You will create a list of coding changes from a change request.

Performance Objective #1 - Given a program change request the student will: (1) note the changes needed in the original program using a program change request and program documentation; (2) mark the changes needed to implement the new input/output/logic request; and (3) note the corrections necessary in the source program on the source listing.

Evaluation/Feedback

Curriculum Worksheet

Duty No. CP

Task No. 20

Duty Performing Activities Related to Computer Programming

Task Write operating instructions using a knowledge of the program logic and specifications to produce an operations manual.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Wrote operating instructions using the program specifications, source lists, and test run output -	____	____
2. Assembled the above information into a written form used by the specific firm -	____	____

References & Resources

See Bibliography Nos. 10, 11, 12, 13, 14, 15, 16, 18, and 19 at end of section

Reference Manuals

DUTY/TASK NUMBER CP-20

Post-Test

Goal Statement #1 - You will write instructions to create an operations manual.

Performance Objective #1 - Given the program specifications and a knowledge of the program logic, the students will produce an operations manual. Performance will be accepted when all documents and instructions are included and operation can successfully be accomplished without assistance.

Evaluation/Feedback

DUTY/TASK NUMBER CP-20

Student Learning Activities	Teacher Activities
1. Students can review sample operating manuals.	1. Provide handouts and examples about operations manuals.
2. Students can review the program logic and specifications.	2. Provide a format for the creating of individual student operation manuals.
3. Students can review the operating manual for the specific hardware being used.	3. Provide the materials necessary for making operations manuals.
4. Students can create the operating instructions for the specific program.	4. Display sample operating manuals.
5. Participate in a group discussion on the make-up and need for an operations manual.	5. Discuss operating techniques for the specific hardware being used.
6. Develop an operations manual for the programs, procedure, and files produced in class.	6. Point out any operating points unique to this program.

DUTY/TASK NUMBER CP-20

Tools and/or Equipment

Central processing unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer.

Cathrode Ray Tubes (CRT) devices for input and output.

Printer -- on-site.

An adequate number of workstations should be available so that one half of the class is involved in hands-on activities at any one time.

Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk); key-to-card.

Conditions

The computer laboratory should contain examples of operations manuals. Each student will make an operations manual which will contain information all about programs, procedures, and files developed by that student. Materials and working tables should be provided for student use.

Criteria

Competence in the task will be recognized when all documents and instructions are included as specified by the firm's stated policy.

Curriculum Worksheet

Duty No. CP

Task No. 21

Duty

Performing Activities Related to Computer Programming

Task

Design data using a knowledge of data characteristics to test the logical correctness of a program.

Pre-Test (Same as Achievement Indicators)

The learner:	Yes	No
1. Listed the characteristics of data to test a program using the program specification as a guide -	____	____
2. Prepared a list of records containing the proper fields of data necessary to test the program -	____	____

References & Resources

Bibliography Nos. 8, 9, 10, 11, 12, and 19.

DUTY/TASK NUMBER CP 21

Student Learning Activities	Teacher Activities
1. Read assigned reference materials on designing test data.	1. Explain the use of test data.
2. Listen to lecture on the task.	2. Provide handouts to establish procedure for the preparing, handling, and deleting of test data.
3. Using multiple card layout or specification sheets, prepare a group of data records that will test all logical alternatives of the program.	3. Discuss the characteristics of test data that will sufficiently test all logical alternatives of the program.
	4. Provide necessary forms and data information as needed to accomplish the task.

DUTY/TASK NUMBER CP 21

Tools and/or Equipment	Conditions
Central Processing Unit (CPU) capable of COBOL, RPG, and BASIC or access to a time-sharing computer. Cathrode Ray Tubes (CRT) devices for input and output. Printer -- on-site. An adequate number of work-stations should be available so that one half of the class is involved in hands-on activities at any one time. Other off-line data entry equipment: key-to-tape, key-to-diskette (floppy disk), key-to-card.	The students with the use of handouts, procedures, and reference materials could, in a laboratory environment, prepare test data.

Criteria Competence in the task will be recognized when sufficient data is listed to test all logical alternatives of the program.

DUTY/TASK NUMBER CP 21

Post-Test

Goal Statement #1 - The student will write test data to test all logical alternatives of the program.

Performance Objective #1 - Given an object program, reference materials, and instructions, the student will prepare a list of records containing the proper fields of data necessary to test all the logical alternatives of the program.

Evaluation/Feedback

BIBLIOGRAPHY

COMPUTER PROGRAMMING

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2. IBM, IBM System/3 COBOL Ref. Manual, 1971.
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4. IBM, IBM System/32 System Control Program Command Statement Ref. Card, 1980.
5. IBM, IBM System/32 System Control Program Ref. Manual, 1975.
6. IBM, IBM System/34 Numerous Reference Manuals.
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11. Shelly and Cashman, Introduction to Computers and Data Processing, Anaheim Publishing, Fullerton, CA, 1980.
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17. Tandy Corporation, Level II Basic Ref. Manual, Radio Shack, A Division of Tandy Corporation, Fort Worth, TX, 1978.
18. Robichaud, Muscat, and Hall, Introduction of Data Processing, Gregg Division McGraw-Hill Book Company, 2nd edition, 1977.
19. Charts, tables, handouts, or transparencies prepared by the instructor.

COMPUTER SYSTEMS
PRODUCT LOCATORS

The Product Locator categorizes Mainframes, Minicomputers, and Microcomputers. Products are listed alphabetically by equipment class, along with a reference to a Product Listing.

■ MAINFRAME

• Billing/Invoicing

Computer Designed System Systems D-28

• General Business

Cambex—Model 1600 Series Processors D-26
National CSS Inc —3200 Central Processor D-44

General-purpose, non-industry specific

Amdahl Corporation—Model 470V/5 D-24
Amdahl Corporation—Model 470V/5-II D-24
Amdahl Corporation—Model 470V/6 D-24
Amdahl Corporation—Model 470V/6-II D-24
Amdahl Corporation—Model 470V/7 D-24
Amdahl Corporation—Model 470V/7A D-24
Amdahl Corporation—Model 470V/7B D-24
Amdahl Corporation—Model 470V/7C D-24
Amdahl Corporation—Model 470V/8 D-24
Amdahl Corporation—Model 5860 D-24
Amdahl Corporation—Model 5880 D-24
Burroughs Corporation—B- 1955 D-25
Burroughs Corporation—B-1985 D-26
Burroughs Corporation—B-5930 D-26
Burroughs Corporation—B-6930 D-26
Burroughs Corporation—B1905 D-26
Cambex—Model 1600 Series Processors D-26
Computer Designed Systems
Control Data Corp —Cyber 170/176 D-28
Control Data Corp —Cyber 170/720 D-28
Control Data Corp.—Cyber 170/730 D-28
Control Data Corp.—Cyber 170/750 D-28
Control Data Corp.—Cyber 170/760 D-28
Control Data Corp.—Model 3100 D-29
Control Data Corp.—Model 3170 D-29
Control Data Corp.—Model 3300 D-29
Control Data Corp.—Model 3600 D-29
Control Data Corp.—Omega 480-I D-29
Control Data Corp.—Omega 480-II D-29
Control Data Corp.—Omega 480-III D-29
Cray Research, Incorporated—CRAY-1 D-29
Cray Research, Incorporated—CRAY-1S Model S/250 D-29
Cray Research, Incorporated—CRAY-1S Model S/500 D-29
Cray Research, Incorporated—CRAY-1S Models S/2200, S/2300, S/2400 D-29
Cray Research, Incorporated—CRAY-1S, Models S/1000, S/1200, S/1300, S/1400 D-29
Cray Research, Incorporated—CRAY-1S, Models S/4200, S/4300, S/4400 D-29
DEC—Model 1060/1070 D-32
DEC—Model 1077 D-34
DEC—Model 1080 D-34
DEC—Model 1088 D-34
DEC—Model 1090 D-34
DEC—Model 1091 D-34
DEC—Model 1099 D-34
DEC—Model 2040 D-34
DEC—Model 2060 D-34
Four-Phase Systems, Inc.—System 311 D-36
Four-Phase Systems, Inc —System 312 D-36
Harris Corporation—Model 800 D-37
Honeywell—DPS 8/20 D-38
Honeywell—DPS 8/44 D-38
Honeywell—DPS 8/52 D-38
Honeywell—DPS 8/70 D-38
Honeywell—DPS/68 D-38
Honeywell—Level 64/DPS System D-38
Honeywell—Level 64/DPS-330 D-38
Honeywell—Level 66 DPS/B D-38
Honeywell—Level 66 DPS/C D-38
Honeywell—Level 66 DPS/440 D-38
Honeywell—Level 66 DPS/520 D-38
Honeywell—Level 66/DPS D-38
Honeywell—Level 66/05 D-38
Honeywell—Level 66/07 D-38
Honeywell—Level 66/10 D-38
Honeywell—Level 66/27 D-38
Honeywell—Model 66/17 D-38
Honeywell—Series 60, Level 62 D-38
Honeywell—Series 60, Level 64 D-38
IBM (DPD)—Model 3031-1 D-39
IBM (DPD)—Model 3032-1 D-39
IBM (DPD)—Model 3033 N D-39
IBM (DPD)—Model 3033 S D-39
IBM (DPD)—Model 3033U AP,MP D-39
IBM (DPD)—Model 3081 D-39
IBM (DPD)—Model 370/158, 370/158-3 D-39
IBM (DPD)—Model 370/168, 370/168-3 D-39
IBM (DPD)—System 370/115, 370/115-2 D-39
IBM (DPD)—System 370/125, 370/125-2 D-39
IBM (DPD)—System 370/138 D-39
IBM (DPD)—System 370/148 D-39
Ilene Industries, Inc.—Model ASI9 I-12
IPL Systems, Inc.—Model 4446 D-41
IPL Systems, Inc.—4400 Series, Model 4436 D-41
IPL Systems, Inc.—4400 Series, Model 4443 D-41
Kennsco, Inc —Model 370 D-41
Magnuson Computer Systems—M80 30 Series - 31,32 D-41
Magnuson Computer Systems—M80 40 Series - 42,43,44 D-41
Nanodata Corporation—Model QM-1 D-43
Nanodata Corporation—Model QMX D-43
National Advanced Systems, Inc.—Model AS/3000 D-43
National Advanced Systems, Inc.—Model AS/3000N D-43
National Advanced Systems, Inc.—Model AS/5000 D-44
National Advanced Systems, Inc.—Model AS/5000E D-44
National Advanced Systems, Inc.—Model AS/5000N D-44
National Advanced Systems, Inc.—Model AS/7000 D-44
National Advanced Systems, Inc.—Model AS/7000 DPC D-44
National Advanced Systems, Inc.—Model AS/7000N D-44
National Advanced Systems, Inc.—Model AS/9000 D-44
National Advanced Systems, Inc.—Model AS/9000 DPC D-44
National Advanced Systems, Inc.—Model AS/9000N D-44
National CSS Inc —3200 Central Processor D-44
NCR Corporation—Model V-8555-M D-44
NCR Corporation—Model V-8555-MP D-44
NCR Corporation—Model V-8565-M D-44
NCR Corporation—Model V-8565-MP D-44
NCR Corporation—Model V-8575-M D-44
NCR Corporation—Model V-8575-MP D-44
NCR Corporation—Model V-8585-M D-44
NCR Corporation—Model V-8585-MP D-44
NCR Corporation—Model V-8650 D-44
NCR Corporation—Model V-8670 D-45
NCR Corporation—Model 8555 D-45
NCR Corporation—Model 8565 D-45
Paradyne Corporation—Model PRS-9101,9201 D-46
Pertec Computer Corporation Systems Marketing Division—1800 XL40, PCC 2000 D-47
Sperry Univac—Model 1100/10 D-50
Sperry Univac—Model 1100/20 D-50
Sperry Univac—Model 1100/40 D-50
Sperry Univac—Model 1100/60 D-50
Sperry Univac—Model 1100/80 D-50
Sperry Univac—Model 90/25 D-50
Sperry Univac—Model 90/30 D-50
Sperry Univac—Model 90/40 D-50
Sperry Univac—Model 90/60 D-50
Sperry Univac—Model 90/80 D-50
Telefile Computer Products Inc.—Model T-85 D-51

• Health service applications

Cambex—Model 1600 Series Processors D-26

• Manufacturing/production

Cambex—Model 1600 Series Processors D-26
National CSS Inc.—3200 Central Processor D-44

• Materials requirement planning

Computer Designed System Systems D-28

• Physician billing

Computer Designed System Systems D-28

• Scientific/engineering

Cray Research, Incorporated—CRAY-1S, Models S/1000, S/1200, S/1300 S/1400 D-29
Ilene Industries, Inc —Model ASI9 I-12
Nanodata Corporation—Model QM-1 D-43

■ HIGH-END MINICOMPUTER

• Architectural/Surveying

Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40

• Banking, savings & loans

Cascade Data, Inc.—Concept III D-26
Idetik Corporation—Model 80 D-40

• Bill of materials

World Information Systems, Inc —Model TDS/16 D-54

• Billing/Invoicing

Cascade Data, Inc —Concept III D-26
Computer Designed System Systems D-28
Mini-Computer Systems, Inc.—Micos 300 D-42

• Chemicals and related products

Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40

• Circulation control

Idetik Corporation—Model 80 D-40

• Computer-aided design

Artec Electronics, Inc.—ARTEC I D-25
Auto-Trol Technology Corp.—AD/380 System/Graphics Processor D-25
Computer Talk, Inc.—Model 400 D-28
Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40
World Information Systems, Inc.—Model TDS/16 D-54

• Computer-aided instruction

Idetik Corporation—Model 80 D-40
Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40
Modular Computer Systems, Inc.—Classic 7860 D-43
Modular Computer Systems, Inc.—Classic 7870 D-43

• Computer-aided manufacturing

Artec Electronics, Inc.—ARTEC I D-25
Auto-Trol Technology Corp.—AD/380 System/Graphics Processor D-25
Computer Talk, Inc.—Model 400 D-28

• Construction

Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40

• Contract services

Comptek Research, Inc.—Barrister Law Office Automation Systems D-27
CYBERTEK Computer Products, Inc.—Model 3200 D-30
Digital Systems Corporation—Galaxy/5 D-35
Mini-Computer Systems, Inc.—Micos 300 D-42
World Information Systems, Inc.—Model TDS/16 D-54

• Distribution

Cascade Data, Inc.—Concept III D-26

• Educational services

Idetik Corporation—Model 80 D-40

• Financial analysis & reporting

Cascade Data, Inc.—Concept III D-26

• Food and related products

Cascade Data, Inc.—Concept III D-26

• General Accounting

Artec Electronics, Inc.—ARTEC I D-25
Cascade Data, Inc.—Concept III D-26
Mini-Computer Systems, Inc.—Micos 300 D-42
Ruben Engineering Corporation—Model 800 D-49

• General Business

BTI Computer Systems—Model 8000 D-25
Centurion Computer Corporation—Model 6300, 6400, and 6500 D-27
Comptek Research, Inc.—Barrister Law Office Automation Systems D-27
Convergent Technologies, Inc.—The Convergent D-29

• General-purpose, non-industry specific

Apollo Computer Inc.—Domain D-24
Basic Four Information Sys Inc. D-25
BTI Computer Systems—Model 8000 D-25
Burroughs Corporation—B 2930 D-25
Centurion Computer Corporation—Model 6300, 6400, and 6500 D-27
Computer Automation, Inc.—Model 4/90 D-27
Computer Automation, Inc.—Model 4/95 D-27
Computer Designed System Systems D-28
Computer Talk, Inc.—Model 400 D-28
Data General—Model ECLIPSE M/600 D-30
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DEC—PDP-11/44 D-34
DEC—PDP-11/60 D-34
DEC—PDP11/70 D-34
DEC—VAX-11/750 D-34
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Digital Systems Corporation—Galaxy/5 D-35
Fischer & Porter - Parent Co.—Model 3800 D-36
Formation, Inc.—Formation F/4000 D-36
Four-Phase Systems, Inc.—System IV/80 D-36
Four-Phase Systems, Inc.—System IV/90-M D-36
Four-Phase Systems, Inc.—System IV/90-S D-36
Four-Phase Systems, Inc.—System IV/95 D-36
Harris Corporation—Model 100 D-37
Harris Corporation—Model 300 D-37
Harris Corporation—Model 500 D-37
Harris Corporation—Model 80 D-37
Harris Corporation—Model 800 D-37
IBM (GSD)—5381 System 38 D-39
ICL Inc. (International Operation D-40
ICL Inc. (International Operation D-40
Microdata Corporation—Reality Series 8000 D-42
Mini-Computer Systems, Inc.—Micos 300 D-42
Modular Computer Systems, Inc.—Classic 7860 D-43
Modular Computer Systems, Inc.—Classic 7870 D-43
National Computer Syste Division D-44
NCR Corporation—Model 8231 D-45
NCR Corporation—Model 8251 D-45
NCR Corporation—Model 8271 D-45
NCR Corporation—Model 8350 D-45
NCR Corporation—Model 8370 D-45
NCR Corporation—Model 8415 D-45
NCR Corporation—Model 8435 D-45
NCR Corporation—Model 8455 D-45
Point 4 Data Corporation—Mark 8 D-48
Prime Computer, Inc.—Series 50 Model 650 D-48
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Systems Engineering Laboratories Inc.—Model 32/75 D-51
Systems Engineering Laboratories, Inc.—Model 32/77 D-51
Systems Engineering Laboratories, Inc.—VPM 3300CM D-51
Systems Engineering Laboratories Inc.—VPS 3200CM D-51
Systems Engineering Laboratories Inc.—VPS 3300CM D-51
Systems Engineering Laboratories, Inc.—VPS 6400CM D-51
Systems Engineering Laboratories Inc.—VPU 3200CM D-51
Systems Engineering Laboratories, Inc.—VPU 6400CM D-51
Tandem Computers—NonStop System D-51
Taylor Instrument Company—Model 3106 D-51
Taylor Instrument Company—Model 3606 D-51
Taylor Instrument Company—Model 4870 N D-51
Texas Instruments Incorporated—DS 990 Model 20 D-52
Texas Instruments Incorporated—DS 990 Model 29 D-52
Texas Instruments Incorporated—DS 990 Model 30 D-52
The Perkin-Elmer Corporation—Model 3220 D-52
The Perkin-Elmer Corporation—Model 3240 D-52
The Perkin-Elmer Corporation—Mode 7/32 C II D-53
The Perkin-Elmer Corporation—Mode 8/32 Megamini D-53
The Perkin-Elmer Corporation—Sixteen Series D-53
Wang Laboratories, Inc.—2200 VS D-54

• Government, Federal

Idetik Corporation—Model 80 D-40
Modular Computer Systems, Inc.—Classic 7860 D-43
Modular Computer Systems, Inc.—Classic 7870 D-43

• Government, State and local

Idetik Corporation—Model 80 D-40
Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40

• Graphics

Intergraph Corporation (Formerly M & S Computing—Interactive Graphics Design System D-40

• Health Care Services

Informatek States, Inc.—Matek 1502 D-40

• Industrial Control and Testing

Convergent Technologies, Inc.—The Convergent D-29
Modular Computer Systems, Inc.—Classic 7860 D-43
Modular Computer Systems, Inc.—Classic 7870 D-43

• Insurance

CYBERTEK Computer Products, Inc.—Model 3200 D-30

• Legal services

Comptek Research, Inc.—Barrister Law Office Automation Systems D-27

• Mail list management

CYBERTEK Computer Products, Inc.—Model 3200 D-30
Digital Systems Corporation—Galaxy/5 D-35

• Manufacturing

Auto-Trol Technology Corp.—AD/380 System/Graphics Processor D-25
Computer Talk, Inc.—Model 400 D-28
Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40
Modular Computer Systems, Inc.—Classic 7860 D-43
Modular Computer Systems, Inc.—Classic 7870 D-43

• Manufacturing/production

Centurion Computer Corporation—Model 6300, 6400, and 6500 D-27

• Materials requirement planning

Computer Designed System Systems D-28
Formation, Inc.—Formation F/4000 D-36

• Medical diagnosis

Informatek States, Inc.—Matek 1502 D-40

• Military

Idetik Corporation—Model 80 D-40
Norden Systems—PDP-11/70M (Military nomenclature AN/UYK-42(V)) D-46
World Information Systems, Inc.—Model TDS/16 D-54

• Non-profit associations

Digital Systems Corporation—Galaxy/5 D-35

• Order entry

Cascade Data, Inc.—Concept III D-26
Ruben Engineering Corporation—Mode 800 D-49

• Petroleum refining & related industries

Intergraph Corporation (Formerly M & S Computing)—Interactive Graphics Design System D-40

• Physician billing

Computer Designed System Systems D-28

• Process control

Taylor Instrument Company—Model 3106 D-51
Taylor Instrument Company—Model 3606 D-51
Taylor Instrument Company—Model 4870 N D-51

• Retail trade

Artec Electronics, Inc.—ARTEC I D-25
Ruben Engineering Corporation—Model 800 D-49

• Sales/management reporting

Cascade Data, Inc.—Concept III D-26
Digital Systems Corporation—Galaxy/5 D-35
Ruben Engineering Corporation—Model 800 D-49

• Scientific/engineering

Convergent Technologies, Inc.—The Convergent D-29
Intergraph Corporation (Formerly M & S Computing—Interactive Graphics Design System D-40
Prime Computer, Inc.—Series 50 Model 650 D-48
Prime Computer, Inc.—Series 50 Model 750 D-48
Systems Engineering Laboratories Inc.—VPS 3300CM D-51
Systems Engineering Laboratories Inc.—VPS 6400CM D-51
World Information Systems, Inc.—Model TDS/16 D-54

■ MID-RANGE MINICOMPUTER

• Aerospace

Cardio-Data Corp.—ECG Processor D-26
Evans & Sutherland—Model MPS (Multi Picture System) D-35
Evans & Sutherland—Model PS2 (Picture System 2) D-35

• Automatic testing (ATE)

Distributed Computer Systems—DCS-86 D-35
Three Phoenix Company—Model 3PX350 D-53
Three Phoenix Company—Model 3PX630 D-53
Three Phoenix Company—Model 3PX631 D-53

• Bill of materials

Advanced Informatics, Ltd.—Informer IV D-23
Q1 Corporation—Microlite D-49

• Billing/Invoicing

Advanced Informatics, Ltd.—Informer IV D-23
Computer Data Access, Inc. (CDA)—The Parts Handler D-28
Comtek, Inc.—Add-Smart Multi Terminal System C2101-CM2 D-28
Comtek, Inc.—Add-Smart System C2101 D-28
Hewlett-Packard Co.—HP 3000 Series III D-37
IBM (GSD)—5320 System 32 D-39
Mini-Computer Systems, Inc.—Micos 200 D-42
Nixdorf Computer—Model 8870/3 D-45
Sentinel Computer Corporation—Models 30, 40, 50, 60 D-49
STC Systems, Inc.—System 4000 D-50
STC Systems, Inc.—System 5000 D-50

• Chemicals and related products

Evans & Sutherland—Model MPS (Multi Picture System) D-35

STUDENT ACHIEVEMENT RECORD

DATA PROCESSING

STUDENT ______________________________

INSTRUCTIONS:

Mark each student's level of competence according to the following guide:

LEVEL	GUIDE
1	Student has been exposed to task
2	Task accomplished with assistance
3	Task accomplished to criteria by student on their own
4	Ability to teach or demonstrate the task to others

TASK	LEVEL	DATE
DE - PERFORMING ACTIVITIES RELATED TO DATA ENTRY		
1. Manipulate switches, keys and levers to activate a data entry device.		
2. Manipulate switches, keys and levers to deactivate a data entry device.		
3. Analyze device malfunction.		
4. Manipulate switches, keys, and levers to correct malfunctions on a data entry device.		
5. Manipulate switches, keys and levers to execute standard service functions.		
6. Analyze a job instruction.		
7. Manipulate switches, keys and levers to create a program to control record format operations.		
8. Manipulate switches and levers to load a program to control record format operations.		

TASK	LEVEL	DATE
DE - PERFORMING ACTIVITIES RELATED TO DATA ENTRY (con't)		
9. Manipulate knobs, levers, switches, and keys to load media onto or into a device for keying data.		
10. Manipulate keys, switches, and levers to select a format for a specific record.		
11. Manipulate keys, switches, and levers to enter data onto a media.		
12. Manipulate keys, switches, and levers to verify by machine the data previously entered.		
13. Analyze a data field to verify visually the data previously entered.		
14. Manipulate keys, switches and levers to duplicate data from one record to another.		
15. Manipulate keys, levers and switches to update data contained in an existing record.		
16. Write job information to create a log of completed work.		
17. Analyze written descriptions in technical manuals to resolve problems with device operations.		
18. Place media in a storage area to maintain a media file library.		
19. Place media in protective containers to store media.		
CO - PERFORMING ACTIVITIES RELATED TO COMPUTER OPERATIONS		
1. Arrange a group of jobs to be executed on a computer.		
2. Analyze operating instructions to obtain the media needed for a specific job.		
3. Read operation instructions to identify the sequence of steps to be performed.		

TASK	LEVEL	DATE
CO - PERFORMING ACTIVITIES RELATED TO COMPUTER OPERATIONS (con't)		
4. Inform persons who are assuming your duties of the status of operations to maintain uninterruped operations.		
5. Analyze operating instructions to identify devices needed for a specific job.		
6. Analyze operating instructions to identify the media to be used with a specific job.		
7. Place media in a storage area to maintain a media file library.		
8. Manipulate protective containers to store media in containers.		
9. Manipulate switches and keys to power up and initialize a computer system.		
10. Manipulate switches and keys.		
11. Manipulate switches and keys on peripheral devices to load media onto the device.		
12. Select job control commands to run a specific job on a computer system.		
13. Analyze messages produced on a console to identify the status of a job.		
14. Analyze written descriptions in technical manuals to interpret descriptions of job control statements.		
15. Compare computer produced output to a job description sample to verify the accuracy of a computer run.		
16. Write information in a log to record information about completed jobs.		
17. Analyze machine generated output to identify the cause of processing errors.		
18. Manipulate switches and keys on a computer console to restart a program execution in which an abnormal halt has occurred.		

TASK	LEVEL	DATE
CO - PERFORMING ACTIVITIES RELATED TO COMPUTER OPERATIONS (con't)		
19. Manipulate levers, keys and switches to adjust operating performance of the device.		
20. Write information on labels to identify specific media as to the data they contain.		
21. Manipulate levers, switches and keys to complete routine servicing normally performed by the operator.		
22. Interpret device performance indicators to identify a machine malfunction.		
23. Report verbally or in writing the malfunction of a device.		
24. Analyze operating instructions to identify files that need back-up.		
25. Interpret system performance to identify system performance inefficiencies.		
CP - PERFORMING ACTIVITIES RELATED TO COMPUTER PROGRAMMING		
1. Analyze a program request to prepare an estimate of the time involved in preparing and executing a computer program.		
2. Analyze a program request to prepare program documentation.		
3. Analyze program specifications to prepare file specifications.		
4. Analyze program specifications to identify specific data characteristics.		
5. Analyze program specifications to construct a guide to code the logical steps of a program.		
6. Analyze written descriptions to interpret descriptions of language statements and operating characteristics of a specific computer system.		

TASK	LEVEL	DATE
CP - PERFORMING ACTIVITIES RELATED TO COMPUTER PROGRAMMING (con't)		
7. Write language statements to produce a source program.		
8. Review a source program to identify coding errors within the source program prior to compilation.		
9. Key source statements into a device to produce computer readable source statements.		
10. Write job control statements to compile a source program into an object program.		
11. Analyze error notation produced by a computer to identify syntax errors in the source program.		
12. Write source statements to produce corrected statements in a source program.		
13. Write job control statements to produce the instructions necessary to execute an object program.		
14. Analyze output data to identify logical errors in the program.		
15. Write source statements to produce a corrected logical sequence in a source program.		
16. Write user instructions to produce a user's manual.		
17. Analyze output of a test run with a user to obtain approval that the program is producing the desired results.		
18. Collect program listings, test data, and other specified documents to produce documentation of the design, coding and operation of the program.		
19. Analyze program documentation to produce a list of coding changes to a computer program.		
20. Write operating instructions to produce an operations manual.		
21. Design data to test the logical correctness of a program.		

CLASS ACHIEVEMENT RECORD

NAME

TASK No.

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